Galaxy

SCIENCE FICTION

JULY 1955

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Galaxy

SCIENCE FICTION

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AND HE SEZ

SOME months ago, I had a very disgruntled letter from a reader. Not knowing what was eating him and unable to grab hold of any answerable complaint — and, of course, wanting to pacify him — I wrote thusly:

"Dear Mr. Blank: Your tone is a lot sharper than your criticism . . ."

At which point, I halted, immensely pleased with myself. For a long while, I've been an admirer of a postcard sent out by a Menken with the same initials as mine, reading:

"Dear Sir or Madam: You may be right."

Menken used this stopper whenever he received a blistering letter, which evidently was often, and I liked it because it left absolutely no room for retort.

But I like mine better, being an inordinate lover of shrewd squelches — especially my own.

One of my favorites was committed by Cardinal Newman, a Catholic wit who made G. K. Chesterton sound merely precocious. Newman was coming from a religious convention of some kind and was lucky enough to snag a cab in the London rain. A minister asked if Newman minded his coming along because the odds on getting another cab were small. Newman, of course, agreed.

As they settled back, the minister said lightly, "It's only right that we should share a taxi. After all, we both serve God."

"Yes," said Newman. "You in your way and I in His."

Another splendid English squelcher was the Rev. Sidney Smith. He was properly scolded by a friend who said:

"That damnable sense of humor of yours is what keeps you from getting a church you can make a decent living from. Why can't you be like your brother? He's sober and industrious. He takes things seriously and look at him — a success instead of a jocular failure like you!"

"True," Smith admitted sadly. "My brother has risen because of his gravity and I have been held down by my levity."

Smith was an energetic letter-writer and so could have claimed repartee when the reply may actually have occurred to him days later. But that's not true of a retort Disraeli made within seconds — there are records of Parliament that give all the necessary proof.

Gladstone, you know, was a bitter enemy of Disraeli and concluded a slashing attack with:

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"Mark my words! This scoundrel will either die on the scaffold or of a loathsome disease!"

Disraeli got to his feet and said quietly, "That depends, sir, on whether I embrace your principles or your mistress."

Like Smith, a neglected genius is Oliver Hereford — he's so neglected that I'm not even sure if I've spelled his last name right — whose comment that "My wife has a whim of iron" has been appropriated by non-wits whose only right to fame is a good memory.

Hereford went to see an exhibition of what may generously be called art by Maxfield Parrish. The irony here is that Parrish, who probably would have used syrup instead of paint if that had been possible, is listed in dictionaries while Hereford is not.

Hereford paused in front of a painting of a typical Parrish young man, studied it a moment and sighed: "How touching! A youth blossoming into womanhood!"

Those, as you can see, are biting remarks. But there are others that do the same job without the sting. For example, I was in artillery training at Fort Bragg, in North Carolina, and my platoon had marched to the howitzer site, where another platoon was taking a break before going on to its next course. I was aghast to see the sergeant, a typical harsh-barking type, showing his men how to play hopscotch and jacks. Naturally, I asked how come.

He looked at me coldly and snapped, "If kids can play soldier, why can't soldiers play kid?"

Maybe you can think of a counter-squelch. I couldn't.

But there is another I thought up that I'm proud of. I just wish Descartes could hear it, for it's my rebuttal to his "Cogito ergo sum" — "I think, therefore I am."

My version is "Cogito sum ergo sum — cogito," which translates, preferably if given a Mexican accent, as "I think I am, therefore I am — I theenk."

Now, to give all this an appropriate flavor of science fiction, I should make at least a stab at extrapolating. The truth is that I don't feel much like doing so; they're good enough to stand on their own — with the possible exception of my conversation stoppers.

Well, not entirely without a sort of wistful personal extrapolation. There will be some corking squelches in the future and I just wish I had a record of them in advance. Or do you suspect that movies and TV will reduce repartee to a bleak "Oh, yeah?"

If they do, posterity can *have* the future!

—H. L. GOLD

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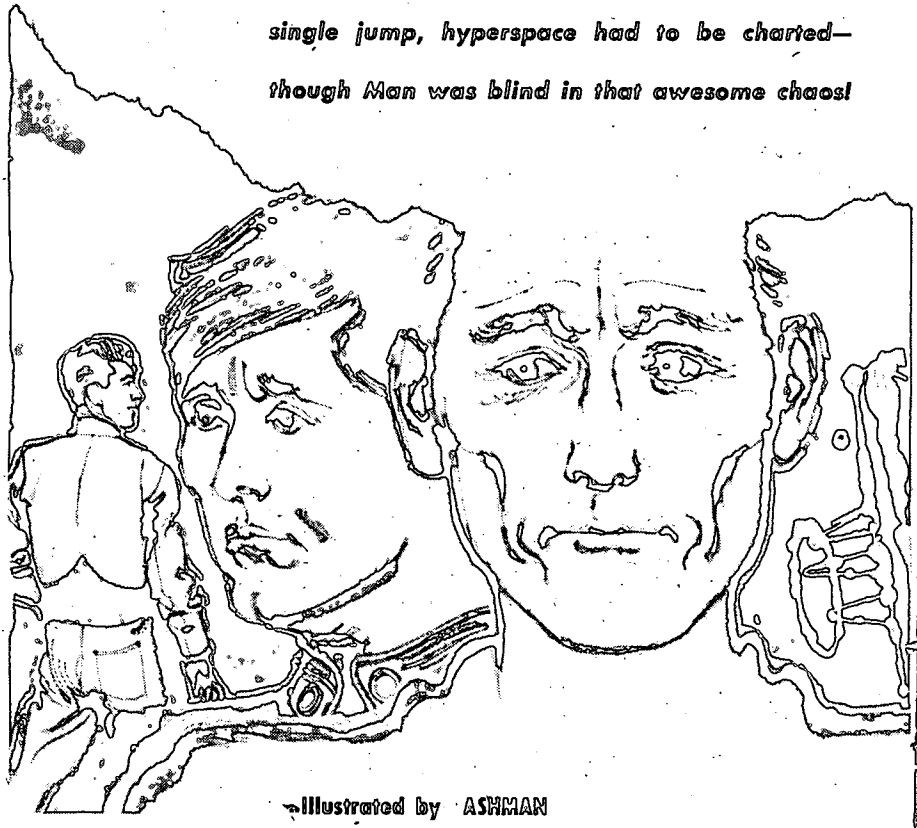
The Mapmakers

By FREDERIK POHL

Before any ship could span light-years in a single jump, hyperspace had to be charted—though Man was blind in that awesome chaos!



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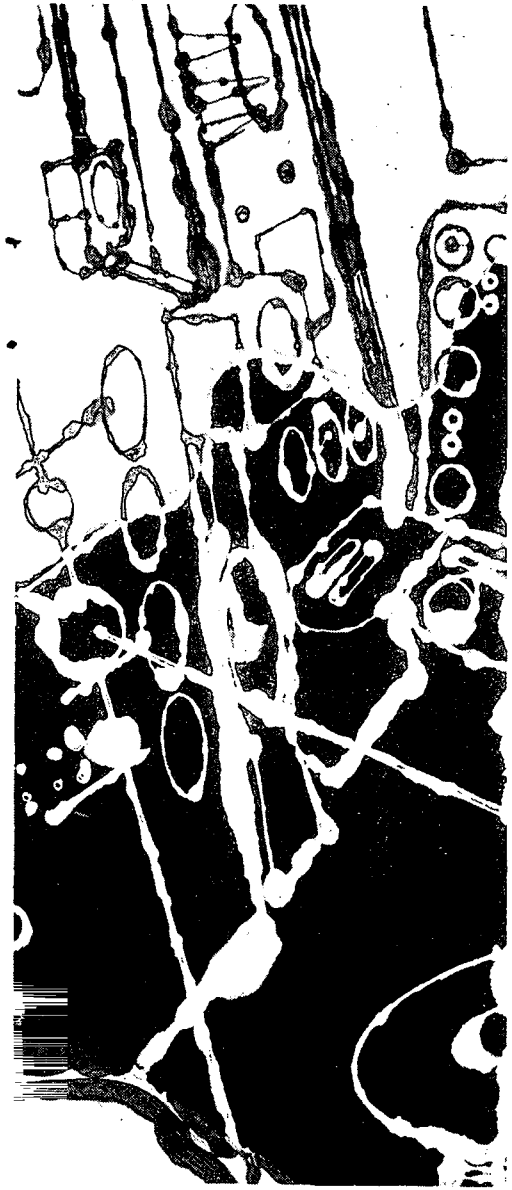

IT was one of those crazy, chance - in - a - million accidents. A particle of meteoric matter slammed into *Starship Terra II* in hyperspace. It was only a small particle, but it penetrated three bulkheads, injuring Lieutenant Groden and destroying the Celestial Atlas. It couldn't happen in a hundred years—but it had happened.

That was the end of the road for *Starship Terra II*. The damage-control parties patched the bulkheads easily enough. But the Atlas—the only record on board of the incomprehensible Riemannian configurations of hyperspace—was a total loss.

The Captain gave orders for Spohn, the Celestial Atlas, to be buried in space and called an emergency officer's meeting in the wardroom.

Terra II was in normal space and free fall. A trace of smoky kerosene odor still hung in the wardroom, but there was none of the queasy unrecognizable slipping motion of the hyperspace "jump," and the Captain had ordered the ship spun to give them a touch of simulated gravity. The officers were managing to look alert and responsive as they faced their skipper.

THE Captain was a hard-muscled, hard - eyed career naval officer, and by definition

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an ambitious man—else he would hardly have asked for the command of a charting flight. He walked briskly in from his own quarters, neither hurrying nor slow. He would walk at that same pace to receive his admiral's stars when that day came, or to his execution, if it ever came to that.

He assumed his place at the head of the table and took the precise ten seconds his martinet mind allotted him for looking around the wardroom. Then he said, "We're in trouble."

The men in the wardroom hitched their hips a quarter inch closer to the ward table.

The Captain nodded and said it again, "We're in the soup, and we're a long way from home, and nobody is going to come to get us out of it. We'll have to do it ourselves, if we can. Ciccarelli's trying to get us a fix, but I can tell you right now, we're not close to Sol. There isn't a constellation in the sky that you or I or anybody else ever saw before. We might be a hundred light-years from home, we might be ten thousand."

The Exec cleared his throat. "Sir, what about our records?"

"What records? They went with the Atlas, Hal. We can't retrace our way to Earth."

"No, sir, that's not what I mean. I understand that. But our charting records from Earth to here, we still have those. They won't do us any good, because we can't follow them backward —hyperspace doesn't work that way. But Earth needs them."

"Sure. What can we do about it? If we could get them back, we could get back ourselves. The whole trouble— Yes? What is it, Lorch?"

Ensign Lorch saluted from the door of the wardroom. "Spohn's body, sir," he rapped out. "It's ready for burial now. Would the Captain like to conduct the services?"

"The Captain will. What about Groden?"

Lorch said, "He isn't good, sir. He's unconscious and his head is bandaged up. The surgeon thinks it's bad. But we won't know for sure for at least a couple of hours."

The Captain nodded, and Lorch quickly took his seat. He was the youngest officer on *Terra II* in years, six months out of the Academy and still unable to vote. He listened to the discussion of ways and means with deference masking a keen feeling of excitement. The adventure of the unknown star lanes! That was why Lorch had signed up in the charting service, and he was getting it.

Perhaps more, even, than he had bargained for.

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THE trouble with *Terra II* was that she was playing a cosmic game of blind-man's-buff. Jumping into hyperspace was like leaping through a shadow, blindfolded; there was no way of knowing in advance what lay on the other side.

The first hyperspace rocket had taught a few lessons, expensively learned. On its first jump into hyperspace, *Terra I* had been "out" for just under one second—just time enough, that is, for the jump generators to swing the ship into and out of the Riemannian n-dimensional composite that they called hyperspace for lack of a better term.

And it had taken *Terra I* nearly a year to limp back home, in normal space all the way, its generators a smoldering ruin. Back still again to the drawing boards!

But it was no one's fault. Who could have foreseen that any electric current, however faint, would so warp the field as to blow up the generators? The lesson was plain:

No electrical equipment in use during a jump.

So *Terra I,* rebuilt, re-equipped and with a new crew, tried again. And this time there were no power failures. The only failure, this time, was the human element.

Because in hyperspace, the Universe was a crazy-quilt of screaming patterns and shimmering lights, no more like the ordered normal-space pattern of stars than the view through a kaleidoscope is like the colored shreds of paper at its focus.

So the Celestial Atlas was added to the complement of a hyperspace rocket's crew. And *Terra I* was rebuilt, and *Terra II* and *Terra III* and *Terra IV* came off the ways. And Earth cast its bait into the turgid depths of hyperspace again and again. . .

The crews of the charting service were all volunteers, all rigidly screened. The ten officers that made up the wardroom of *Terra II* were as brilliant and able a group as ever assembled, but the emergency officers' meeting was a failure, all the same.

There just wasn't any way back.

"We're the trail-blazers," rumbled the Captain. "If we had a duplicate Celestial Atlas—but we don't. Well, that's something for the next ship to bear in mind, if we ever get back to tell them about it."

ENSIGN Lorch said tentatively, "Sir, *don't* we have one?"

The Captain rasped, "Of course not, man! I just finished saying we didn't. You should know that."

"Yes, sir. But that's not exact-

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ly what I meant. We have a Library and, as I understand it, the Library is basically the same as the Atlas—a trained total-recall observer. Doesn't any of the information in the Library duplicate the Atlas?"

"Now that," said the Captain after a pause, "is worth thinking about. What about it, Hal?"

The Exec said, "Worth a try, Captain."

"Right. Yoel, get her up here." Lieutenant Yoel saluted and spoke into the communications tube. The Captain went on reflectively. "Probably won't work, of course, but we'll try anything. Anybody else got a suggestion?"

"Dead reckoning, sir?" Yoel suggested. "I know we've got the record of our fixes so far; can we try just backtracking?"

"Won't work," the Captain said positively. "If we could be absolutely exact, maybe. But without an Atlas we can't be. And a centimeter's divergence at the beginning of a run might put us a thousand kilometers off at the end. A thousand kilometers in hyperspace—heaven knows what that might come to in normal space. Anything from a million light-years down.

"I couldn't do it, Yoel. Even Groden couldn't do it *with* his eyes, and he's the best ship-handler on board. And I don't think he's going to have his eyes, anyway, at least not for a long time. Maybe forever, if we don't get back to the eye banks on Earth. Without the Atlas, we're as blind as Groden."

The speaking tube interrupted and rescued Yoel. It whistled thinly: "Recorder Mate Eklund reporting to the wardroom."

"Send her in," said the Exec, and the Library, Nancy Eklund, RM2c, marched smartly in to the meeting.

IT wasn't going to work; the Captain knew it in the first few words. They spent an hour sweating the Library of all of her relevant data, but it was wasted effort.

The Captain thought wistfully of Recorder Mate Spohn, the lost Celestial Atlas. With him on the bridge, hyperspace navigation had been—well, not easy, but *possible*. For Spohn was trained in the techniques of total recall. The shifting, multicolored values of Riemannian space formed totals in his mind, so that he could actually navigate by means of a process of mental analysis and synthesis so rapid and complex that it became a sort of *gestalt*.

Of course, a twelve-stage electronic computer could have done the same thing, just as quickly. But *Terra II* had its limitations, and one of the limitations was

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that no electronic equipment could be operated in a jump—just when the computer would most be needed. So the designers came up with what was, after all, a fairly well tested method of filing information — the human brain. By the techniques of hypnotic conditioning *all* of the brain opened up to subconscious storing.

Recorder Mate Spohn, trancelike on the bridge, had no conscious knowledge of what was going on as, machinelike, he scanned the Riemannian configurations and rapped out courses and speeds; but his subconscious never erred. With its countless cells and infinite linkages, the brain was a tank that all the world's knowledge could hardly fill — just about big enough, in fact, to cope with the task of recognizing the meaning of hyperspace configurations.

And the process worked so well that the delighted designers added another Recorder Mate to the personnel tables—the Library—which enabled them to dispense with the dead weight of books as well.

The entire wardroom, in order of rank, shot questions at their Library, and her disciplined mind dutifully plucked out answers.

But most of them she never knew. For *Terra II* was a charting ship, and though the Atlas had, as a matter of routine, transcribed his calibrations into the ship's log—and thence into the Library—all that Nancy Eklund knew was how *Terra II* had reached its checkpoints in space. Hyperspace was a tricky business; backtracking was dangerous.

When *Terra II* got back—*if Terra II* got back—those who came after them would have complete calibrations for a round trip. But they did not. Their task was as difficult and dangerous, in its way, as Columbus' caravels. Except that Columbus had only one great fear; falling off the edge of the Earth.

Lucky Columbus. The technology that had produced *Terra II* had brought plenty of new fears.

THREE shells "up" — toward the ship's center—a surgeon's mate named Conboy was pulling the fourth needle out of the arm of Lieutenant Groden. The big navigator should have been out cold, but he was tossing and mumbling, his head thrashing from side to side in its thick wrappings of bandage.

Tough guy, thought Conboy critically, counting up the ampoules of opiate the blinded officer had taken. They were all tough guys, anyway, from the Skipper on down. But the little

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pipettes brought them down to size and Conboy, though only an inch over five feet tall and the frailest on board, was the man who drove in the pipettes.

"He's under, Mr. Broderick," he reported to the ship's surgeon, who nodded.

"Keep it so," the officer ordered. "If anything comes up, I'll be in the wardroom." The Captain would be wanting to hear about Groden's condition, and Broderick wanted very much to hear what the emergency meeting had to say about the condition of *Terra II* in general.

This was fine with Conboy, who had a similar concern of his own. As soon as Commander Broderick was out of sight, Conboy took a last look at Groden and, reassured that the navigator would be out of trouble for at least half an hour, hurried to the next cabin to pry what information he could out of the chart room.

A Spaceman-First named Coriell was methodically taking optical measurement on all the stars of second magnitude or brighter. Conboy looked uncomprehendingly at the entries on the charts. "Got anything?" he asked.

Coriell spat disgustedly. "Got trouble. See that little fellow down there, between the two real bright ones? That *might* be Canopus. The rough lines check; Mr. Ciccarelli's going to have to run a spectrum on it, when he gets through with the meeting."

Conboy looked sourly at the indicated star. It was brighter than the average, but far less bright than the two that flanked it. "Canopus, huh?" he repeated. "Suppose it is, Coriell. How far from Earth does that put us?"

Coriell shrugged. 'What am I, a navigator? How's Groden, by the way?"

"He'll live. Suppose it is, Coriell?"

"Well—" Coriell thought for a moment. "Depends. If we're on the same side of it as Earth, might not be far at all. If we're on the other side—well, Canopus is six hundred and fifty light-years from Sol."

Conboy looked again, longingly. "Well, thanks," he said, and went back to his patient.

That was the trouble with hyperspace travel, he thought. You go in at one point, you rocket around until you think it's time to come out, and there you are. Where is "there"? Why, that's the surprise that's in store for you, because you never know until you get there.

And sometimes not even then.

ON the bridge, everything was Condition Able. Ensign Lorch, booted early out of the meeting because he was due to

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relieve as Junior OOD, signed in and made his tour of the ship. The damage control parties belowdecks were all through with the necessary repairs, and keeping themselves busy with such cosmetic tasks as fairing down the beads left by the first emergency welds. It was hot down there.

Lorch conscientiously whistled up the bridge on the speaking tube and ordered them to start the fans and valve enough gas into the expansion locks to make up for the heat rise. The crew quarters were shipshape, even the women's section; the jet chambers were at stand-by, with the jetroom hands busy at their usual stand-by task of thumping the tubes for possible hidden cracks. The working parties were finishing up the job of restowing the cargo that had to be shifted when the meteorite hit.

Lorch signed in the log, and paused thoughtfully over the spaces for entries of course and position. The helmsman was smartly at attention at the main board, though there was nothing for him to do since all jets were capped. Lorch glanced at him reprovingly, but the helmsman was conspicuously correct in his behavior.

It made a problem; Lorch detested the thought of writing in "unknown," but it certainly would be exceeding his authority to call the chart room without the permission of Lieutenant Yoel, his shift commander. Not, thought Lorch a trifle rebelliously, that Yoel was likely to object very strongly.

Yoel was a drafted mathematician, not a ship-handler. He knew very nearly all there was to know about geodesic theory and the complex equations that lay behind the "jump" generators and their odd nucleophoretic drive. But he was far from a model officer, so little conscious of the fundamental law of R.H.I.P. that he was capable of presuming to advise the Captain on ship-handling—the scene in the wardroom had proved that.

LORCH had just about decided to call down to the chart room when Yoel appeared, signaling that the meeting was over, and Lorch deftly dropped the problem in his superior's lap. "Ship on Condition Able," he reported briskly. "No maneuvering during watch; no change in operating status during watch. I have made no entry for course and position, sir. Thought you might like to."

"I wouldn't," Yoel said sourly. "Put down 'unknown.' Write it in big letters."

"As bad as that, sir?"

"As bad as that." Yoel turned

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his back on his junior and methodically scanned the segment of sky outside the port. It was in constant spinning motion, flashing past the field of vision as *Terra II* whirled on its axis to give the crew something approaching gravity.

Lorch cleared his throat. "You got nothing out of Eklund, sir?"

"Oh, sure. We got the absolute magnitudes and stellar distances of half the stars in the Galaxy." Yoel turned from the port and shook his head. "We got a short course in Riemannian geometry and an outline of the geodesics of n-dimensional space. But we didn't get a road map." He glanced at the thermometer on the wall and said vaguely, "I thought I heard—"

He stood up straight. "*Mister* Lorch!" he exploded. "I wasn't hearing things! You were bleeding air into the expansion locks!"

"Why, yes, sir. To cool the ship," Lorch explained. "The welding torches were—"

"Blast the welding torches, mister! Did it ever occur to you we're a long way from home?"

"Yes, sir, but—"

"But you're an idiot! But! You valve air off as though we had a whole world of it. Did it ever occur to you that we might be in space a long time? Did you stop to think that we might run out of air?"

Lorch stared at him wordless. For a frozen moment he thought his superior had gone mad. Spaceships? Spaceships ran from point to point. In n-dimensional hyperspace, no point was far from any other—an hour's travel, perhaps a day's. *Terra II* was crammed to the gunwales with air, by the standards of the service. Run out of *air?*

II

"EASY, Sam." The voice came floating up at Groden out of blackness. Something was wrong, and he was lying down; he grunted and started to get up.

A hand stopped him. The voice said, "Easy." He fell back, and felt nothing as he fell. His whole body was numbed, only a faint tingling sensation where it touched what he was lying on. Drugged, he thought. The voice said, "Sam, don't try to open your eyes. Can you hear me?"

It was like making a statue speak, but he got the word out, "Yes."

"Good. You've been hurt. A meteorite hit while we were in hyperspace. Got the Atlas, and something got you right across the eyes—drops of molten metal, by the scars. You're—you're blind, Sam. At least for now."

"Yes," he said, after a moment. There was a very special

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sort of tingling around the eyes.

"Maybe we can fix you up when we get back to Earth. But we're lost, Sam."

Lost? Groden pondered that. Lost. It didn't make sense. Of course, if the Atlas was dead—But still, how could they be lost? He strained to hear what the voice was saying; but it had gone on to something else.

Soothingly. "Now, Sam, this is going to hurt. We've got to change the dressings." Business of tingling, and more tingling of a different sort, but not anything that Groden could call painful. And then, suddenly and surprisingly, it hurt very much. He tried to speak, but the voice said, "Easy, Sam. It will only take a minute." Silence and pain. "Now, I want you to tell me if you can see anything at all, Sam. Any light? Even a flicker when I pass the light over your face?"

Light? Groden stared into the painful blackness. There was nothing, nothing at all, neither light nor flicker nor motion. He said through the lips that were still tingling marble, "No."

The voice was disappointed. "All right, Sam. I'll stop the pain in a minute." Another voice farther away was saying something about getting stowed away for the jump and the voice that had talked to Groden said impatiently, "Just a minute."

Groden licked the marble lips and tried to say, "What did you mean, lost? What's the matter?" But it came out a blur. The voice said something short and insincerely reassuring, and then there was a special pricking tingle in his arm, and even the voices were dark.

"SECURE," ordered the Captain, and the Exec relayed the word through the speaking tubes: "Secure!" One by one the sections reported in on their tubes —All secure.

The Captain had taken the conn himself, and he had the bridge on the jump. Lieutenant Yoel was backing up the helmsman, the navigator Ciccarelli was staring dubiously at the whirling stars, Ensign Lorch was hustling along the light-up detail, as they, with painstaking slowness, adjusted the hollow wicks in the running lamps. The odor of kerosene filled the bridge.

"All secure, sir," the Exec reported.

The Captain said curtly, "Kill the spin." The Exec gave the order to the jetroom; there was a distant barking rattle, and the bridge complement, like standing wheat in gusty wind, staggered and caught itself. The spinning stars outside jerked unevenly to a stop as the ship steadied on its axis.

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Lorch cast a quick look around. The chronometers were wound and synchronized; the kerosene lamps burning brightly. He saluted the Exec and reported all clear. The Exec nodded gravely and passed the word on to the Captain—all of a yard away.

The Captain said, "Take us up, Hal."

"Yes, sir. Number One circuits open!"

The watch officer relayed into the speaking tube: "Number One circuits open!" There was a flicker, and abruptly all of the fluorescent lights were out. Only the kerosene lamps illuminated the bridge, or any of the ship.

"Number Two open," said the Exec.

"Open Number Two!" Yoel echoed into the tube. From all over the ship the distant drone of motors, fans and refrigerators and boosters and burners deepened and died.

"Main circuit breakers open." That was only a precaution. Every electric current in the ship had ceased to flow; but in the off-chance that something, somewhere, still was drawing juice, the mains themselves were opened. *Terra I* had taught that lesson very well; electronic flow and the hyperspace field did not mix.

The Exec, looking a little gray, said, "Stand by to jump."

"Stand by!" Yoel sang into the

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generator-room tube. The far-away moan of the nucleophoretic generators shook everyone in the ship; even on the bridge, they could feel their subsonic grind and hear the rumble of the Diesels that drove them.

The Exec was rapidly scanning his panel of instruments, his lips moving. Everyone on the bridge could see his lips move, and knew what he was doing; making sure he had the readings memorized. Once in hyperspace, it would not be precisely impossible for him to read them, but it wouldn't be reliable.

At the feeler chart table where the Celestial Atlas should have been standing, Recorder Mate Nancy Eklund stood with her fingers on the pits and ridges that represented the coded course analyses. Like the Exec, she was doing her best to memorize them, in the last moments before vision became unreliable and instruments began to lie; it was her last chance to see them as a whole.

The Exec had its eyes on the big chronometer. As the second hand touched straight-up, he said, "Jump!"

Far away, the Diesels complained, as the generators clutched in. The ship shimmered and glowed. A high, thin *beep* sounded from nowhere. Outside the crystal port the universe of stars flickered and whirled into new and fantastic shapes.

And, half the ship away in the sick bay, Lieutenant Groden screamed shrilly.

ENSIGN Lorch tried shutting his eyes, but the flaming pinwheels had left scars of blankness on the visual purple of his retina. He blinked to clear away the darting after-images. When he opened them again, the images were gone, and lashing serpentines of light peered ferociously in the port. The writhing snakes squirmed away and the planet Earth lay before him, green and inviting.

It was only an illusion, but it was an illusion the whole bridge saw at once. Lorch looked away and heard the voice of Nancy Eklund, droning her course coordinates to be repeated by the Exec.

Illusion, illusion — only the voices were real. It had to do, Lorch thought fuzzily through the wonder, with light speeds and partial radiation vectors and null-polarity; but the words meant nothing when the reality was before his eyes.

"C" became infinite and finite at once, creepingly slow and immeasurably fast. Light trapped on the outer surface of the port crept through to them at last, movement appeared fast or slow

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or reversed, or irrelevant to its real components.

He could see the Captain, stolid and transfixed like a bronze man—but was he? Or was that motionless metal figure really leaping about the bridge, and what Lorch's eyes beheld only the image of a split-second, captured and pinned? He could see the navigator, Ciccarelli, floating dreamily a yard above the floor; *that* was illusion and symbol, for the little magnets in their shoes made it impossible. But what reality, translated, did it represent?

Light and electrons. In hyperspace, they lied.

"Number Six, Number Ten," droned the Exec, echoing the Library. "Full reverse." The voices did not lie; the grosser physical phenomena were immune to the distortion of Riemann's continuum. What they heard was what was there to hear. What Nancy Eklund felt with her fingers was real. Lorch saw, or seemed to see, that the Exec had his finger on the pulse in his own wrist, timing their jets-on periods by his heartbeat.

The spring-driven chronometer across the bridge was clearly visible and undoubtedly telling the correct time. But the light that carried its message might lie, and the fingers that touched his pulse would not. "Off jets!" droned the Exec.

THEY hung there. This was what Ciccarelli and the Exec and the Old Man had worked out—lacking the Atlas, lacking Groden—working only from their memories of the course that had brought them into the meteorite's orbit and the sketchy notes the Captain himself had made.

If they had remembered everything with the eidetic recollection of Eklund or the Atlas; if they had every component correct, and could stay on course for the proper period before halting their flight; they might—*might*—come out where they had started, and from there easily find their way home.

There was motion and activity on the bridge while they waited; and Lorch observed that Ciccarelli had kicked loose his shoes to float high enough off the steel floor to touch the hands of the chronometer. If he was floating now, thought Lorch, it was no lie of the light. And was what he had seen a moment before the image of *now,* received before it was sent?

They waited, and asked themselves such demented questions, while *Terra II* described the complex curve that passed for a Riemannian straight line, and the Exec thoughtfully counted his heartbeats.

Then: "Full jets, One, Four, Five Main," snapped the Exec.

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The ship bucked and shuddered.

And then it was over, and they came "down" out of hyperspace, down into the normal space-time frame that held their own sun and their own planet. They had backtracked, as near as could be, every component of their course. And they had come out.

They stared wordlessly at the stars, until the Captain said briskly, "Belay that. Take a fix, Mr. Ciccarelli!" And down in the sick-bay, little Conboy, able once more to trust his vision, was rapidly assembling a hypodermic. But as he turned to his patient, he saw that it wasn't necessary; Groden, who had been mumbling and crying out throughout the jump into hyperspace, was out cold again.

CICCARELLI put down his abacus.

"No position, sir," he said throatily to the Captain. "We've checked everything down to third magnitude."

The Old Man's chin went up a degree of arc, but that was all. "All right," he said. "Keep going."

"We'll try, sir," Ciccarelli promised. "I'll get right to work on the faint ones."

The Captain nodded and walked delicately, almost mincingly in the light spin-gravity, away. Commander Broderick from the surgeon's office down the corridor replaced him. He was staring after the Captain, as he came into the navigation room.

"If I were the Old Man," he said thoughtfully, "I would still be here."

"Maybe that's why you aren't the Old Man." Ciccarelli wearily leaned over his crewman's shoulder to scan the rough log.

"Maybe," Broderick agreed. "Still, what's he going to do back on the bridge? Go through this same routine again? Make another jump and see where we come out? Might work, I don't deny it. Given infinite time *and* infinite fuel and a couple of other infinites, sooner or later we'd come out right spang in the middle of the Brooklyn Navy Yard."

"Tell him your troubles," Ciccarelli said shortly. "How's Groden?"

"He'll live. If any of us do."

"That," said Ciccarelli, picking up the completed sheaf of observations from his crewman, "is a pretty long shot, Doc."

The Captain, in his own mind, would have agreed with Ciccarelli. He walked soberly, unswervingly, down the galleyways toward the bridge, ticking off the posibilities with a part of his brain while the big, deep area that might been labeled "officer's country" was making careful note of the ship's condition.

The fuel and food reserves

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would outlast the air; and Broderick's sick-bay was an Asiatic mess. Lacking the Atlas's data and Groden's skill on the bridge, it would take a miracle to get them home; and Spaceman-Second Kerkam was out of uniform.

The enlisted women's quarters needed floor-polishing; and the mind of no three-dimensional animal could, by definition, grasp the geodesics of Riemannian space. It was a matter of trial and error and record, and all you could hope to do was retrace a course once you had found one that brought you somewhere worth being. It was, he reflected with mild distaste, a shoddy way to run a spaceship.

RECORDER Mate Eklund, having ducked into the enlisted women's area scant yards ahead of the Captain, sighed to her bunkmate, "Thank heaven! I thought he was coming in here!"

"Did you have a rough time on the bridge?" her bunkmate asked sympathetically.

"No, not that. But he's a fish, Julia. He was just standing there, not looking scared or anything, and all the time we were going straight to—straight to goodness knows where. *He* doesn't know what to do," she added bitterly. "None of them do."

"You think we're lost?"

"Think it? Honey, I *know* it." She sat down and complained, "I've got a headache."

"I wouldn't be surprised," her bunkmate said warmly. "Here, let me get you a cup of tea."

Nancy Eklund said doubtfully, "Do you think you should? Every time you boil water, it's just that much more heat. And—"

"Now let me worry about that," said Julia. "You're a pretty important person on this ship, and you've got to keep yourself in good shape."

The Library let herself be persuaded easily enough, though she had an idea that her bunkmate had an ulterior motive or two. But she *did* have a headache and she *was* tired.

And it was true that on the bridge during a jump, she was about the most important person aboard.

It was a duty that Nancy hated, though, important or not. She thanked her lucky stars that most of the time she was in a trance state and not able to observe, for instance, what the distortions of hyperspace were doing to her own personal appearance. But it was finicking, wearing work, even in a trance state. Some of it was bound to seep through to the conscious level, however distorted, and she had been having dreams about hyperspace courses, fixes and triangulation points.

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Julia came back with the tea and Nancy Eklund said, "I'm sorry to be always complaining. Heaven knows it's no worse than we had a right to expect. We knew this was dangerous when we signed up for it."

"But we didn't know we'd sweat ourselves to death, Nancy! We didn't expect this eternal should-I-light-the-lights, should-I-boil-some-coffee. Honestly, I don't mind dying half as much as I mind being nibbled to death by one little annoyance after another!" She glanced speculatively at the other girl, and in a different tone said, "I guess you're pretty tired—"

Nancy Eklund sat up and stared at her. "Julia! You can't want me to go on with that horrible story."

"Not if you don't feel up to it," her bunkmate said humbly. "But it passes the time—if you aren't too hoarse."

"Well, no." Nancy took a sip of tea. "I was receiving, not putting out," she said professionally. "I suppose if you *really* want—"

"Index!" said Julia triumphantly, not waiting for her to change her mind. As Nancy Eklund, at the cue word, slumped into the trance state, Julia caught the cup of tea before it spilled. "Fiction!" she said, and went on to give the author's name, the title and the chapter of the mystery she had been "reading." She settled back happily as the Library took up the story again.

It wasn't, Julia told herself, as if it really mattered. After all, there wasn't anything for Nancy or anyone else to do, until the geniuses in navigation and computation had figured out where they were. And that would probably take days.

BUT she was wrong. In the wardroom, Commander Broderick was brooding over a bowl of coffee, half watching a bridge game, when Ciccarelli walked in. He looked tired; he didn't even wait for anyone to ask; he volunteered, "Yeah, yeah, we have a position. It isn't good."

"Pretty far?" one of the card players asked wistfully.

Ciccarelli nodded, unsmiling. "Pretty far. We got our fix by triangulating on extra-galactic nebulae, which will give you an idea. I make it—" he glanced at them under his eyebrows—"better than fifteen thousand light-years from Sol."

Ensign Lorch picked up the cards and began to deal them automatically; there wasn't anything much else to do. But his mind was not very completely on bridge.

Fifteen thousand light-years from Sol.

In hyperspace, he thought, it

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might have been a voyage only of minutes. Outside of the three dimensions in which humans live their normal lives, distances are a matter of cosmic whim. Aldebaran and Betelgeuse, in hyperspace, may almost touch; Luna and the Earth may be infinities apart.

Lorch, staring unseeing at his cards, licked his lips. They had cruised around in hyperspace for a few hours of actual "jump" time before the meteorite had struck. And they had found themselves perhaps a thousand light-years from Earth, perhaps less. They had backtracked moment for moment, as well as they could figure, the same course—and their new position was a dozen times as far.

That was the nature of hyperspace. Line A-B in Newton's universe might be more than line A-B in Riemann's, or it might be less, but it was never the same. And the distances, Lorch thought cloudily, might not even be commutative; A-B plus B-C might not be, probably was not, the same as B-C plus A-B. That was why the Atlas, with his infinite stored checkpoints and positions, had a place on the bridge . . .

"Bid, for God's sake," someone was saying impatiently.

Lorch shook himself. "I'm sorry," he said, focusing on his cards. "Say, isn't it getting hot?"

Nobody answered.

They wouldn't, thought Commander Broderick, lowering into his bowl of cold coffee. Hot? Sure it's getting hot. Not starvation, not thirst, not suffocation—heat. That was the spaceman's enemy, that was what would kill them all.

EVERY time one of the crew drew a breath, carbon in his body oxidized and gave off heat. Every time the rocket jets blasted, heat seeped from the tubes into the frame of the ship. Every time the Diesels that drove the nucleophoretic generators coughed and spun, or the cooks fried an egg, or a spaceman lit a cigarette, there was heat.

Take a hot poker, Broderick suggested meditatively to himself. You can watch it glow red and lose heat that way—that is radiation. You can wave it in the air and let the breeze carry the heat away—that is convection. Or you can quench it in a bucket of oil—and that is conduction. And those are the only ways there are, in Newton's space or Riemann's, of taking heat from one body and giving it to another. And in vacuum, the latter two did not operate, for lack of matter to operate with.

Radiation, thought Broderick, radiation would work. A pity we're not red hot.

If they had been at a tempera-

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ture of a thousand degrees, they would have cooled quite rapidly. But at a temperature of perhaps 25° Centigrade, average through *Terra II's* hull, radiation was minute. The loss through radiation was more, much more, than made up through internal heat sources, and so the heat of the ship, hour by hour, climbed.

It had been a long time, Broderick remembered, since he had heard the hiss of expanding air. That was how one coped with heat. From the pressurized parts of the ship, valve off air, the expansion cools, the cooling takes heat from the rest of the ship. Replace the air from the high-pressure tanks, and there's more than enough air in the tanks for any imaginable hyperspace voyage, since none can conceivably last more than a few weeks—and that's that.

"Sir," a voice said, and Broderick realized that the voice had said it before. It was a messenger, saluting respectfully.

"What is it?" he growled.

"Surgeon Mate Conboy," the messenger recited crisply, "asks if you can step down to the sick-bay. Lieutenant Groden is cutting up."

"All right, all right," said Broderick, and waved the messenger away. Groden, he thought, what's the use of worrying about Groden? He'll cook as well as any of us, on this handsomely adventurous hyperspace cruise that cannot conceivably last more than a few weeks.

"You trumped my trick!" howled Ensign Lorch's partner as the surgeon was leaving. Lorch blinked and stared.

"Sorry," he said automatically, then bent and looked closer. "I've only got two cards," he said. "Why does the dummy still have five?"

III

RECORDER Mate Eklund took it as a joke. She looked at herself in the mirror and told her friend Julia, "I think it's quite nice. I don't see why we don't do it all the time."

"You've got the figure for it," Julia said glumly, comparing her own dumpy silhouette with the other girl's. These issue-bathing suits weren't particularly flattering either, she told herself resentfully, knowing in her heart that the fabric had never been loomed to flatter her figure the way it did Nancy Eklund's. "Bathing suits," she said irritatedly. "Oh, why did I ever sign on for this?"

Recorder Mate Eklund patted her arm and jauntily stepped out into the corridor. The male members of the crew were wearing trunks by now, too. She felt more

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as though she were at some rather crowded beach than aboard *Terra II*. Except that it was so *hot*.

Not only had the uniform of the day been changed to the bare minimum, but there had been other changes in the ship's routine. No more spinning the ship for gravity, for instance. The magnetic-soled shoes were issued for everyone now, because spinning the ship took rocket power, and rocket power meant more heat that they couldn't get rid of. The magnet shoes were all right, but it did take a certain amount of concentration to remember heel-and-toe-and-lean, heel-and-toe-and-lean, in a sort of bent-over half trot like the one that Groucho Marx had once, long before Nancy's time, made famous.

She loped crouching into the Captain's quarters, saluted and took her place. It *was* getting a little wearisome, she thought detachedly. Everything anybody said, it seemed, they wanted recorded in her brain, and nobody ever seemed to take a breath without demanding some part of the stored knowledge recited back to him. Still, when she was recording she was, in effect, asleep; she woke up slightly refreshed, though there were some confusing dreams.

She wondered absently, for a moment, just what she *did* know, in the part of her mind where the records were kept, the part that was available only to outsiders on presentation of the cue words, and never to her.

But by then the other officers had arrived, and the Captain snapped, "*Records*," and she slumped back. Not quite all the way back—just enough so that the natural tensions in the great muscles of the back and thighs reached a point of equilibrium—and, in the non-gravity of the still ship, her sleeping body, moored by the magnets at the feet, floated like Mahomet's Tomb above the chair.

Ensign Lorch felt the Captain's eyes on him and hastily looked away from the Library. Good-looking kid, though, he thought; this strip-down business had its advantages. Too bad the other women in the crew weren't more like her.

THE meeting lasted an hour by the chronometer, as had each meeting of each of the previous eleven days. And it accomplished as much as its eleven predecessors.

"Summing up, then," the Captain said savagely. "One, we can't jump home because we don't know the way; two, we can't jet home through normal space because we don't have the fuel or air; three, we can't stay where we

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are because we'll roast. Is that it?"

The Exec said, "That's it, sir. We might set down on another planet, though."

"A planet nearby?" The Captain thought that over. "What about it, Ciccarelli?"

The navigator shrugged. "If we can find one, sir. I'd say the chances were poor. We've got very little in the way of fuel reserve. Every jump uses up a little, and—well, if we come out of a jump within, let's say, a tenth of a light-year of a habitable planet, pretty nearly at relative rest to it, we might be able to make it. We've got maybe one chance in a thousand of that."

Commander Broderick said, "Sir, this is just a wild notion, but suppose we did one of those things they're always doing in the movies, you know? Freeze the whole ship's crew in suspended animation. I believe I could manage something like that out of the medical supplies, if we could only bring the temperature low enough—"

"That's just what we *can't* do," said the Captain.

"Yes, sir," Broderick agreed. "But if we did that, we could valve off a lot of air—maybe enough to cool the ship. Nobody would be breathing, you see. And we could rig up some sort of alarm for when we got there. Wouldn't matter if it was years—even centuries; there would be a vacuum, and no specimen deterioration—I mean, nothing happening to us."

Ciccarelli said mulishly, "Impossible. It's the question of relative rest again. We haven't got enough fuel to mess around. Suppose we found Sol, and pointed right for it. By the time we got there, where would it be? And how fast would it be going, in what direction? Maybe you can tell. I can't."

BRODERICK crouched disconsolately back into his sickbay, and the enlisted man he'd left behind looked up in relief. "It's Groden, sir," he said at once. "He's been acting up."

Ensign Lorch, behind Broderick, hesitated in the doorway. "Acting up?" demanded Broderick.

"Yes, sir. I gave him another needle, but it didn't take effect. I guess it was delirium, sir. Took three ampoules—"

The voices trailed off as they went inside. Lorch made himself comfortable—not an easy job in non-gravity, that is if you were a commissioned officer and concerned about smart appearance.

The two medics were gone for a long time, and when Commander Broderick came out again he looked worried. "Sorry, Lorch,"

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he apologized. He felt the pressure-pot of coffee on the little stove and made a face. "Want some?"

Lorch shook his head. "Too much trouble to drink."

"Don't blame you." But Broderick carefully coaxed a couple of ounces of the stuff into a transparent plastic bulb, teased sugar and cream in after it, spun the bulb with his thumb over the opening to stir it, took a sip. "I don't like it," he brooded over his coffee. "Groden's working up real damage, the kind I can't handle."

Lorch asked curiously, "What kind is that?"

"Inside his head. I had to tell him that his sight was gone, unless we can get to an eye bank within ten days. The optic nerves, Lorch—you can patch in an eye, but once the nerve has degenerated you can't replace it. And he took it hard."

"Yelled and cut up?"

"Worse than that," said Broderick. "He didn't say a word. Now, I *know* that man's in pain; the scars around his eyes are pretty bad. I gave him a couple of pills to knock out the nerve centers, but Conboy found them under his pillow. He wouldn't take them, and he wouldn't make a sound—until he fell asleep, and then he damn near woke up the ship. Conboy must have given him fifty ampoules by now—too much of the stuff. But we can't have him screaming. He's punishing himself, Lorch."

"For what?"

"Who knows for what? If I could put him through an E.E.S., I might be able to find out. But how can you run an electroencephaloscope on a tub like this? I'm lucky they let me have an X-ray."

Lorch said, perhaps a touch too drily, "What did doctors do before they had those gadgets? Shoot the patients?"

It made Broderick look at him thoughtfully. "No," he said after a second. "Of course not. With luck, I could run a verbal analysis on him, and I might pick some of the key stuff out of the sludge in, oh, four or five months. That's what they did before they had the E.E.S. And now let's get busy, mister."

The two of them worked over an inventory of Broderick's medicine chest, because even though the idea of putting the whole ship's crew in suspended animation was ridiculous and impossible and contra-regs besides—what else was there?

And it kept getting hotter.

EVEN Groden felt it.

He called reasonably to whoever was near, "Please do what I ask. Put things back the way

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they were, please. Please do it!" He said it many times, many different ways. But his tongue was fat black velvet and his mouth an enormous cave; he couldn't feel the words, couldn't feel his tongue against his cheeks or teeth. That was the needles they kept sticking him with, he told himself. "Please," he said, "no more needles."

But he wasn't getting through.

Groden relaxed. He forced himself to relax, and it wasn't easy. His body was all wrong; it hurt in places, and felt nothing in places, and—were those feelings at his waist and shoulders and legs the touch of restraining belts? He couldn't tell.

He was lying on his back, he was pretty sure. At least, the voices seemed to come from points in the plane of his body, as well as he could locate them. But if he was lying on his back, he asked himself, why didn't he feel pressure on his back? Or pressure anywhere? Could the ship be in free-fall — all this length of time? Impossible, he told himself.

He went back to relaxing.

The thing was to keep from panic. If you were physically relaxed, you couldn't panic. That was what they had taught at the Academy, and it was true. Only they hadn't taught the converse, he thought bitterly; they hadn't said that when you were in panic it was impossible to relax.

No. That's not the way to go about it, he told himself. Relax. Occupy your mind with—with—well, occupy your mind with *something*. Take inventory, for instance.

One, it's hot. There was no doubt of that.

Two, something was pressing against his body at various points. It *felt* like restraining belts.

Three, voices came and talked to him. Damned dirty lying voices that— He caught himself just in time.

Four, he said to himself, *four,* somebody keeps sticking needles into me.

It was the needles, he thought wretchedly, that made everything else so bad. Maybe the needles *caused* everything else. With craven hope he told himself: Sure, the needles; they're sticking me full of drugs; naturally I'm having delusions. Who wouldn't? I'm lucky if I don't turn into a hophead if I get out of this—

When I get out of this, he corrected himself, whimpering.

He wondered whether he was crying.

Of course, if those lying voices were, by some chance, *not* lying, then he couldn't be crying. Because he wouldn't have any eyes to cry with. And, he told himself reasonably, there wasn't much

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doubt that the voices were plausible. He had been injured somewhere around his eyes; he had felt the pain, and it was too intense and specific to be unreal. That was in the old days—how long ago they were, he could not begin to imagine—when there had been only a few needles now and then, and even if he did have a little trouble moving and talking, he was still in perfect possession of his faculties.

All right, he thought. So I was injured around the eyes.

But the rest—that was a damned lie. He had even believed it for a while—when the Broderick-voice said, with hypocritical sympathy, that he wouldn't be able to see anything, ever, unless they got him new corpse's eyes out of an eye bank on Earth. It had been a blow, but he believed it. Until, he reminded himself triumphantly, he had *seen!* Seen as clearly as he knew the voices were lying, that was when he began to suspect the existence of the whole horrible senseless plot.

"No!" he screamed. "Please, please—no!" But they couldn't be hearing him, because they were going right on with another needle; he could feel it. Furiously he fought to pull back the alien arm, make the marble lips move, the black velvet tongue speak, "*Please*—"

ON the bridge, the Captain was staring fixedly at the alien stars. It was a measure of his state of mind that he was on the bridge at all, at a time when the ship was going nowhere and there was nothing to be done beyond the routine.

He leaned forward in his chair, jerking free the little magnets sewn into the waist of his trunks, and walked heel-and-toe across the bridge. The little Recorder Mate, Eklund or whatever her name was, was standing humbly in a corner, waiting for him to tell her why he had sent for her. But, the Captain confessed to himself, the trouble was he didn't exactly know why himself. And, after all, why should he? It was so damned hot—

Belay that kind of talk, he told himself. He said: "Eklund! Index." The girl's eyes closed like the snapping of a shutter.

"Take over," the Captain ordered the Exec. "Run her through the Riemannian configurations again. We'll get every bit of dope she has." And they would, he knew. Because they had already.

And none of it helped.

IV

IT was a good thing, Ensign Lorch told himself, sweating, that spaceships were not painted. Otherwise he would surely have

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been set to commanding a crew chipping paint.

Terra II being welded of unpainted metal, the color a part of the alloy itself, his crew was defluffing the filter traps in the air circulators. It was a job for idiots, planned by morons; it took six men five hours to disassemble the air trunks and the junction boxes, five minutes to blow out the collected fluff on the static accumulators, five hours to put them back together again. There was an alternative method, which involved burning them clean with a high-voltage arc; that took one man slightly under three seconds. But that, the Exec had decreed, meant heat.

And *heat* was the enemy.

Of course, there was still a third alternative, which was to leave the fluff in the filter traps undisturbed. This would have generated no heat at all. But it also would have taken no time and occupied no personnel, which were decisive counts against it in the eyes of the Exec. A little fluff in the filters would make no conceivable difference to the operation of the ship, but idle men might make a very great difference indeed.

"Hurry it up," growled Ensign Lorch. The men didn't even look at him. Lorch looked around him self-consciously. As an officer, he had made inspection tours in the enlisted women's quarters before, but he couldn't help feeling out of place and slightly apprehensive.

That girl, the Recorder Mate—Eklund was her name—was droning all the parts of *Cyrano de Bergerac* to an audience in the far end of the lounge, and parts of Cyrano's farewell to Roxanne kept mixing in with Lorch's thoughts.

It didn't matter; he wasn't thinking to any purpose, anyhow. Neither he nor anyone else on *Terra II,* he told himself bitterly. Fifteen thousand light-years. The light that came to them from Sol—how weak and faint!—had been bright summer sunlight beating down on the skin tents of Neolithic Man creeping northward after the retreating ice. And the light from the nearest stars beyond *Terra II*'s skin, contrariwise, would fall on an Earth inconceivably advanced, a planet of mental Titans . . .

"Mister Lorch," someone was repeating plaintively.

The ensign shook himself and focused on the spaceman wavering before him. "Eh?"

"We're done," the man repeated. "It's all put together again. The filter traps," he explained.

"Oh," said Ensign Lorch. He glanced self-consciously at the women at the far end of the lounge, but they were absorbed

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in Rostand's love story. There was a murmur of gossip from them—"so all at once I knew there was somebody *looking* at me. Well, I called the duty officer and we searched, but—"

Ensign Lorch cleared his throat. "Well done," he said absently. "Dismissed." He turned his back on the detail and propelled himself down the passageway toward the sickbay.

IF he went back to the bridge, the Old Man would find work for him; if he went to the wardroom, the Exec would find an excuse to send him to the Old Man. And his own quarters were horribly, stifling hot.

He accosted the Ship's Surgeon and demanded, "How long are we expected to live in this heat?"

Commander Broderick said irritably, "How should I know? You don't die of the heat, that's sure. There are other things that will come first—suffocation, thirst, maybe even starvation."

Lorch looked thoughtful at the medical officer. Red-eyed, his face lined with worry and weariness, Broderick was showing strain. Through his scanty shorts, you could see the fishbelly whiteness of his skin; it was old man's skin, and Broderick, for all of his passing the annual fitness exam, was getting on toward being an old man.

Lorch said more gently, "I guess you're getting a rough time all around."

"Good Lord, am I!" the surgeon snapped. "Half the ship's complement has been in here today—little fiddling things like prickly heat and dizzy spells. Dizzy spells! How the devil can anyone *not* have dizzy spells? The women's quarters have practically a regular courier service. If it isn't anti-perspirants, it's salt tablets; if it isn't salt tablets, it's alcohol from the ship's store for rubdowns." He passed his hand shakily over his eyes. "Then," he said, "to top it all off, there's him." He pointed to the inner chamber of the sickbay. Lorch, listening, could hear the blinded Groden's rasping breath.

There was a shrill whistle from the speaking tube, then, tinnily, a voice from the bridge. "Commander Broderick! Captain requests you report to the bridge at once."

The Surgeon blinked and swore. "How the devil am I supposed to do that?" he demanded. "Two of my crewmen are out with heat prostration, and the other two were working all night. All right, I go up to the bridge. Suppose there's some trouble? Suppose Groden starts acting up again?" He stared irresolutely at the speaking tube.

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Lorch said thoughtfully, "Say, Commander, could I keep an eye on him for you?"

It was a fine idea. Broderick took off for the bridge and Lorch, hastily briefed on the simple task of sticking a new needle in Groden's arm if he showed any signs of trouble, bade him a careful good-by and waited until he was well out of sight before, whistling, he knelt before the cabinet of emergency medical supplies.

Broderick had given him an idea. And, he told himself blissfully, moments later, it had been a good one. Alcohol rub! Now why hadn't he thought of that himself?

He hardly noticed that Groden's heavy breathing had changed pitch and character. It almost formed words now.

ON the bridge, the Captain was briefing the ship's officers—all but Groden, in the sickbay, and Lorch, who, the Captain had agreed, was easily enough spared to watch after Groden—on what in his mind he called Project Desperation. It didn't take much briefing, because it was the only thing left for them to do and every man on the ship knew it.

"We have," the Captain said precisely, "margin for just under forty minutes of rocket blast at standard thrust. That will bring our overall temperature up to 60°, give or take a degree, according to Engineering's best guess. And that's the maximum the human body can stand—that's right, Broderick?"

The Surgeon quickly translated into the Fahrenheit scale; a hundred and forty degrees or so.

"That's right, sir," he said. "If we can stand that much," he added reluctantly after a moment. "It hits that on Earth in a couple of places—around the Dead Sea, Aden, places like that. But it isn't sustained heat; it drops considerably after dark."

The Captain nodded somberly. "We'll hope," he said, "that we'll find ourselves out of this before we hit sixty degrees. If we don't—well, at least we won't starve or suffocate. You understand, gentlemen, that the odds are against us. I suggested to Lieutenant Ciccarelli that it was a million-to-one shot. He said I was an optimist. But one chance in a million, or a billion, or whatever the number may be, is better than no chance at all. Do you all agree?"

There was no answer. The Captain went on, "Before we jump, I presume no one has a better idea?" No one had. "Thank you. Then, gentlemen, if you will assume your stations, we'll get down to business. Stand by to jump."

The Captain took his place with

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an air of benign detachment. It wasn't a Captain's job to take the conn of a ship in a perfectly routine maneuver. He watched approvingly as the Exec put the ship on alert, then on stand-by, then went through the checklist that culminated in the "jump" into hyperspace.

The Captain was a model of placid, observant command officership, but behind the placid face, the agitated mind was churning out awful calculations.

Consider the Galaxy, he was thinking to himself; a hundred thousand light-years broad, perhaps forty thousand through its axis. Call it a lens-shaped figure with a volume of three hundred trillion light-years. Say that their cruising radius, in normal space, was within a volume of one light-year; that meant that the chances of their coming out, by accident, within cruising distance of Earth was—not one in a million, or one in a hundred million, or one in a billion . . .

It was one chance in three hundred trillion.

The Captain juggled the numbers comfortably enough in his mind. They were absolutely meaningless, far too big to be comprehended or feared.

THERE it was, the beautiful Master Pattern.

Groden lay tense and fearful, seeing it. It had been a long time since the last needle; by the only clock he owned, his heartbeat, it had been more than two hours since he discovered that he could move his lips and his fingers again. He had feverishly wondered why; and had dared not speak or move after the first trials for fear of bringing the needle again. But now he knew.

There was the Master Pattern. He scanned it slowly in every part. There was the giant star-cluster of Hercules; and there the bridge of *Terra II;* there was the fat red disc of Betelgeuse; and there the shower room of the enlisted women's quarters. He took in the ordered ranks of the constellations as easily as he noted that Broderick was gone from the sickbay, and in his place the young ensign, Lorch, was clinging with harried expression to a stanchion. They were in hyperspace. Broderick was on the bridge. Lorch had been left in charge, and it had not occurred to him, since his patient had been so carefully quiet, to administer another needle.

Groden carefully moved his hands, and found that they would do what he wanted. He was getting the hang of—well, it was not seeing, exactly, he confessed to himself. It was like being alone on a starless night, in the middle of a dark wood. It took time to

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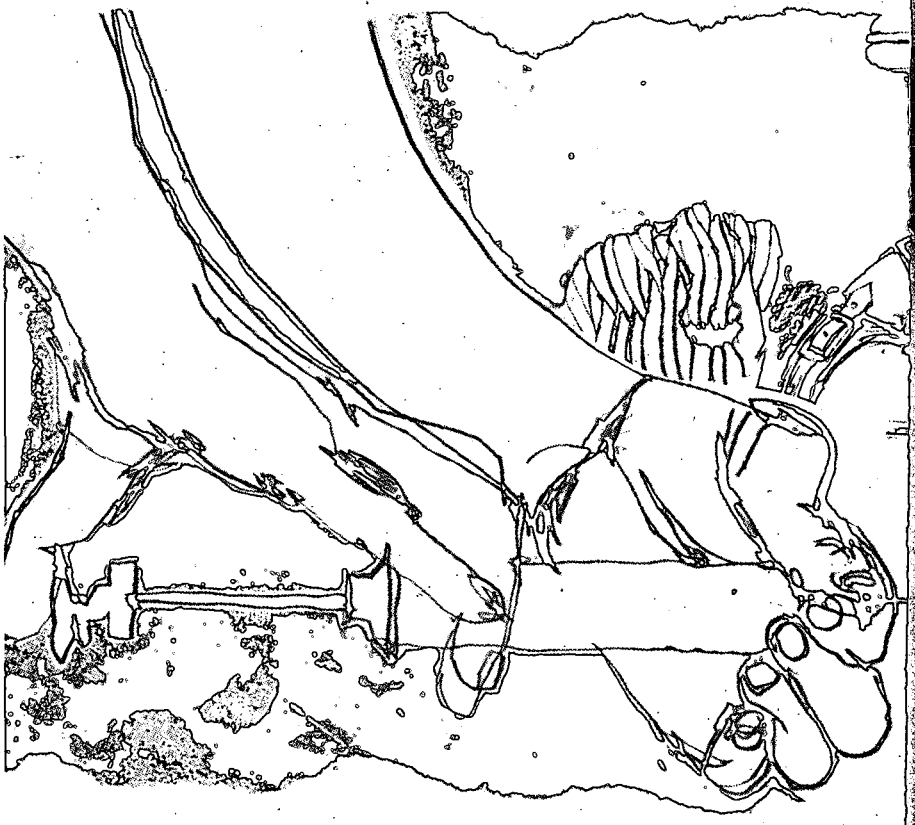

get used to the darkness, but by and by shapes would begin to make themselves known.

It was not the same thing; this was no mere matter of the expanding pupil of the eye; but the effect was something the same. But explain it or not, he was becoming able to use it; each time the beautiful vision was more complete, and therefore more beautiful.

He found the straps that bound him, and unbuckled them.

On the bridge, he "saw," the jump at random was nearing its end. It would be only a matter of minutes before they were back in normal space, and he was blind again.

In the outer room of the sick-bay, Ensign Lorch was staring dismally at the hallucinations of hyperspace. It was almost cer-

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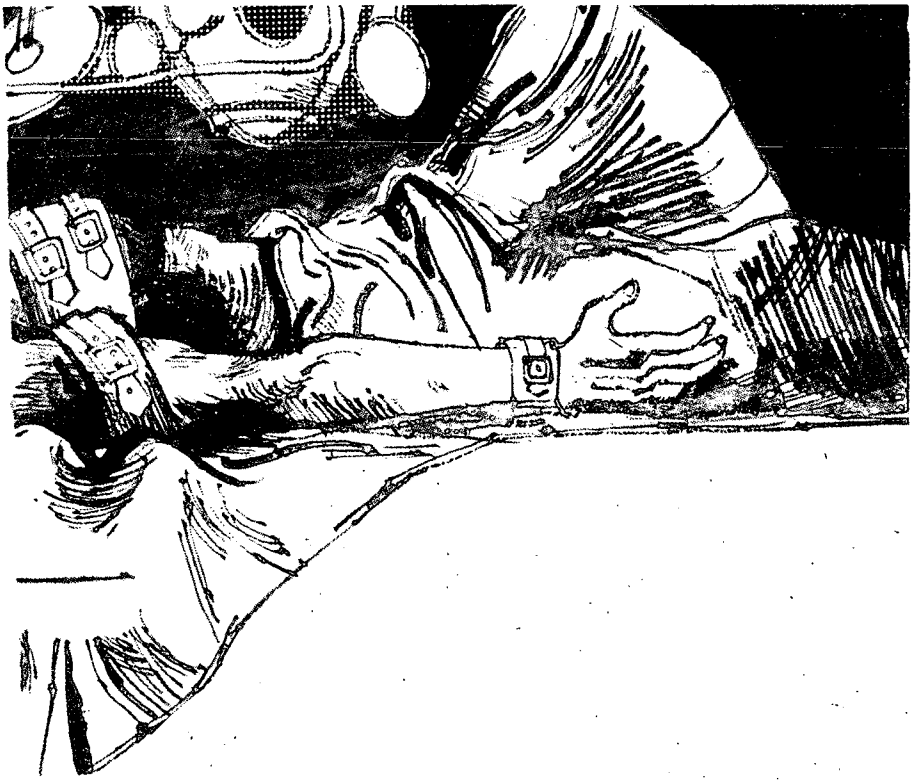

tain, thought Groden to himself, that if Lorch was so fortunate as to see him at all, he would pass off the sight as another of the lies light told. The important thing was sound; he must not make a noise.

He crept through the door, carefully holding to the guide rails. Broderick had been right about one thing, though, he admitted—the pain. The wreck of his eyes no longer seemed as important, with the wonderful things hyperspace's cloudless perception brought to him, but the shattered bone and tissue and nerve ends *hurt.*

Algol's dark primary occluded the radiant star for a second and confused him; they were moving faster than he had thought. He hastily scanned the Master Plan again, fearful for a second. But

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there was Sol and its family of planets, and there was Earth. *Terra II* might be lost, but Lieutenant Groden was not, and if only he could get to the bridge. . .

He scanned the bridge. It was later than he thought. He felt the vibrations in the floor as he realized that the jump was at an end. Panicked, he hesitated.

Blackness again, and no more stars.

He stood there, incredibly desolate, and the pain was suddenly more than he could bear.

And from behind him he heard a startled yell, Lorch's voice: "Hey, Groden! Come back here! What the devil are you doing out in the passage?"

It was the last straw. Groden had no tear ducts left with which to weep, but he did the best he could.

BRODERICK worked over the girl, Eklund, for a moment, and brought her to. She stared at him uncomprehendingly for a moment, but she was all right. As all right, he thought, as anyone on *Terra II* had any chance to be.

"Plain heat prostration," he reported to the Captain. "It's been a pretty rough job for her, trying to keep on top of all this."

The Captain nodded unemotionally. "Well, Ciccarelli?" he demanded.

The Navigator ran his hands through his hair. "No position, sir," he said despondently. "Maybe if I ran down the third and fourth magnitude stars—"

"Don't bother," the Captain said. "If we aren't within a light-year of Sol, we're too far to do us any good. At your convenience, gentlemen, we'll take another jump."

The Exec nodded wearily and opened his mouth to give the order, but Broderick protested, "Sir, we'll all be falling over if we don't take a break. The temperature's past forty-five now. The only way to handle it is frequent rests and plenty of liquids."

"Ten minutes be enough?"

The surgeon hesitated. Then he shrugged. "Why not? No sense worrying about long-term effects just now, is there?"

"There is not," said the Captain. "Make it so," he ordered the Exec.

The Captain half-closed his eyes, fanning himself mechanically. When the runner from the wardroom brought him his plastic globe of fruit juices he accepted it and began to sip, but he wasn't paying very much attention. He had the figures on the tip of his tongue: The first blind jump in Project Desperation had cost them sixteen minutes of rocket time. He could be a little more conservative with

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the next one—maybe use only ten minutes. That way he could squeeze out at least one more full-length, or nearly full-length, jump; and then one last truly desperate try, not more than a minute or two. And if that didn't work, they were cooked.

Literally, he told himself wryly.

In fact, he continued, counting up the entries in red ink on their ledger, they were just about out of luck now. For even if their next jump took them within cruising distance of Earth, there was still the time factor to be considered. They had left only twenty-four minutes of jet time before *Terra II's* hull temperature passed the critical sixty-degree mark.

True, he had maintained some slight reserve in that not *all* their expansible gas had been used. There remained a certain amount in the compressed tanks. And even beyond that, it would be possible to valve off some of the ship's ambient air itself, dropping the pressure to, say, ten pounds to the square inch or even less.

That *might* give them maneuvering time in normal space—provided they were God-blessed enough to come out of one of the three remaining jumps within range of Earth, provided all the angels of heaven were helping them. . .

Which, it was clear, he told himself, they weren't.

"Sir," said Commander Broderick's voice, "I think you can proceed now."

The Captain opened his eyes. "Thank you," he said gravely and nodded to the Exec. It was a quick job by now. The kerosene lamps were already lit, the main electric circuits already cut; it was only a matter of double-checking and of getting the nucleophoretic generators up to speed.

The Captain observed the routine attentively. It did not matter that the fitness reports for which he was taking mental notes might never be written. It was a Captain's job to make his evaluations all the same.

"Stand by to jump!" called the Exec, and the talker repeated it into the tubes. Down in the generator room, the jumpmen listened for the command. It came; they heaved on the enormous manual clutches.

And *Terra II* slipped into Riemannian space once more.

THE stars whirled before the Captain's eyes and became geometrical figures in prismatic colors. The slight, worn figure of the Library, the girl named Eklund, ballooned and wavered and seemed to float around the bridge. The Captain looked on

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with composure; he was used to the illusions of hyperspace. Even —almost—he understood them. From the girl's vast stored knowledge, he had learned of the connection between electric potential and the three-dimensional matrix.

Light and electrons: In hyperspace, they lied.

Matter was still matter, he thought; the strange lights beyond the viewing pane were stars. And the subtler flow within his body was dependable enough, for he could hear as reliably as ever and if he touched something hot, the nerve ends would scream *Burn!* to his brain. But the messenger between the stars and the brain—the photons and electrons that conveyed the image—were aberrants; they followed curious Riemannian courses, and no brain bound by the strictures of three dimensions could sort them out.

Just as now, thought the Captain with detached amusement, I seem to be seeing old Groden here on the bridge. Ridiculous, but as plain as life. If I didn't know he was asleep in the sick-bay, I'd swear it was he.

"Captain! Captain!" Ensign Lorch's voice penetrated over the metronome - cadenced commands of the Exec and the bustling noises of the bridge.

The Captain stared wonderingly at the phantasms of light. "Ensign Lorch?" he demanded. "But—"

"Yes, sir! I'm really here and so is Groden." Lorch's voice went on as the Captain peered into the chaos of shifting images. Lorch himself wasn't visible — unless that sea-green inverted monstrosity with a head of fire was Lorch. But the voice was Lorch's voice, and the figure of Groden, complete with the white wrappings over the eyes, was shadowy but real. And the voices were saying —astonishing things.

"You mean," said the Captain at last, "that *Groden* can pilot us home?"

"That," said Groden, in the first confident voice he had been able to use in days, "is just what he means."

V

BLIND man's buff. And what better player can there be than a blind man?

Lieutenant Groden, eyeless and far-seeing, stood by the Exec's left hand and clipped out courses and directions. The Exec marveled, and stared unbelievingly at the fantastic patterns outside the bridge, and followed orders.

And presently Groden gave the order to stop all jets and drop back into normal space. In a moment, he was blind again—

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and the rest of the bridge complement found themselves staring at a reddish sun with a family of five planets, two of them Earthlike and green.

"That's not Sol!" barked the Captain.

"No," said Groden wearily, "but it's a place to land and cool the ship and replenish our air. You ran us close to the danger line, Captain."

Terra II came whistling down onto a broad, sandy plain, and lay quiet, its jet tubes smoking, while the Planetology section put out its feelers and reported:

"Temperature, pressure, atmospheric analysis and radiation spectrum—all Earth normal. No poisons or biotic agents apparent on gross examination."

"There won't be any on closer examination either," said Groden. "This planet's clean, Captain." He stood hanging on to a stanchion, pressed down by the gravity of the world he had found for them.

The Captain looked at him thoughtfully for a moment, but there were more important things to attend to.

"Bleed in two pounds," ordered the Captain and the Duty Officer saluted and issued orders into the speaking tube.

They had run close to the danger line, indeed; the ambient pressure inside *Terra II*'s hull had been bled down to a scant ten pounds, in order to use as much cooling effect from releasing gas as possible. Whether it was clean or not, no man could step out onto the surface of the new planet until the pressures had been brought back to normal.

They stood at the view panel looking out on the world. They were near its equator, but the temperature was cool by Earth standards. Before them was a broad, gentle sea; behind them, a rim of green-clad hills.

The Captain made ready to send his first landing party onto a new and livable planet.

THE scouting parties were back and the Captain, for once, was smiling. "Wonderful!" he exulted. "A perfect planet for colonization—and we owe it all to you, Groden."

"That's right," said Groden. He was lying down on a wardroom bench—Broderick's orders. Broderick had wanted to put him under sedation again, in fact, but that had brought Groden too close to mutiny.

The Captain glanced at his Navigator. The swathed bandages hid Groden's expression, and after a moment the Captain decided to overlook the remark.

He went on, "It's a medal for you. You deserve it, Groden."

"He'll need it, sir," said Com-

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mander Broderick. "There won't be any new eyes for Lieutenant Groden." He looked old and sick and defeated. "The optic nerves are too far gone. New eyes wouldn't help now; there's nothing that would help. He'll never have eyes again."

"Sure," said Groden casually. "I knew it before I brought you here, Captain."

The Captain frowned uncomprehendingly, but Broderick caught the meaning in an instant. "You mean you could have brought us back to Earth?" he demanded.

"In two jumps," Groden told him easily.

"Then why didn't you?" snapped the Captain. "I have a responsibility to my crew—I can't let a man go blind because of phony heroics!"

Groden swung him feet down, sat up., "Who's a hero? I just didn't want to trade what I have now for what I used to have, that's all."

"Meaning what?" asked Broderick.

"It's more than seeing. Want to know how many Sol-type systems there are within five thousand light-years of here? I can tell you. Want to know what the Universe looks like in hyperspace? I can tell you that, too, only I can't describe it. It makes *sense,* Captain! The whole thing is as orderly and chartable as our own space. And I could see it, all of it. And you offer me *eyes!*"

"But why don't I see it, Groden?" the Captain puzzledly wanted to know. "Surely we've all closed our eyes for a moment in hyperspace—why didn't we see it then?"

"Sleep and death are alike, but they're not the same. Neither is closing your eyes and being blind. I'm blind in normal space; you're blind in hyperspace—that isn't much of an answer, but the medics will work it out."

The Surgeon looked piercingly at Groden's bandaged face. "Then the odds are that *any* blind person can see in hyperspace?"

"I think so," Groden agreed. "In fact, I'm practically certain."

"Then," said the Captain, "it's our duty to return to Earth and let them know. They can equip each mapmaking ship with a blind person."

Groden gave his head a shake. "Plenty of time for that, Skipper. We have a quadrant of hyperspace to chart. With me on hand to 'see' during the jumps, we'll finish up fast. Then we can go back and tell them. But I think we should get on with the job we've been assigned."

"Right," said the Captain after a pause. "We'll bring the ship to stand-by for takeoff."

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THE rockets thundered and *Terra II* split the atmosphere on its way to deeper space.

As soon as they were clear, the ship readied for the jump and the Captain said, "Good luck, Groden. It's all yours—give us our course."

Groden felt the quiver of the generators, far below, and at once the Universe lay spread before him.

No more darkness, no blind fumblings. An end to basket-weaving and the dreary time-passing fingering of Braille for Earth's incurable blind. They would be the eyes of the proud new hyperspace fleet that was yet to come!

"It's all yours, Groden," the Captain repeated.

Groden cleared his throat, issued his course vectors.

Captain, you don't know how right you are, he thought. Only it won't be just mine—it'll be the blind leading the sighted!

Now there, he chuckled, was a switch. But he'd have to wait until he was back on Earth, among the blind, for it to be appreciated.

—FREDERIK POHL

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SPOKEN FOR

He was lost — anyone could see that — but she had no idea how entirely lost he was nor why!

By WILLIAM MORRISON

Illustrated by EMSH

HALF of Jupiter's great disk and most of the other moons were below the horizon when the man stepped out of the plane and changed her life. As far as Carol Marsh was concerned, he was ordinary enough in appearance. And she wasn't ordinarily attracted to ordinary men.

He was slightly over medium height, his features were not quite regular, and he had a deep tan over what had started out as a sunburn, so that she decided he had misjudged the strength of the sun on some planet with a thin atmosphere.

She frowned as she watched him look around. She was annoyed by the fact that it took him almost a minute to get his bearings and realize that she was first, a human being and second, a girl well worth a man's attention.

Even the troubled expression in his eyes was something she held against him. A man shouldn't look troubled. A man should be confident, self-assured in a manner that also assured the girl he spoke to. She remembered that back on Earth John Burr had been completely self-assured.

It was startling to realize that it was with this newcomer, whose appearance she had every reason

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to dislike, that she had fallen suddenly and completely in love, as suddenly and completely as if she had fallen off a cliff.

"I'm looking for some people," he said. "But I suppose —" His very voice was ill at ease, and that was something else she should have held against him. And against herself. She had always resented men whose voices betrayed their lack of confidence. "I suppose it's no use," he went on. "I'd recognize the house."

"Who are the people you're looking for?"

He took out a wallet, and from it drew a stereo picture. Two children, a boy and a girl, were standing with a smiling young woman in front of a sturdy, old-fashioned plastic house. Their clothes were out of fashion by a year or so, but that depended on where you were. Mars, for instance, was always three years behind Earth. Here on Ganymede, on the other hand, you might even be ahead of Earth in some respects.

AS CAROL'S eyes lifted to his, she saw him staring at the picture with such longing that she at once knew herself for a fool. *They're his wife and children,* she thought. *He's trying to find them. And I had to fall in love with him at first sight.*

His eyes were on her now, and she said, "I'm sorry, I've never seen them."

"Have you lived around here long?"

"Five years."

"Then this can't be the place." He stood there irresolutely and started to turn slowly away without even a word of thanks to her.

"My father may have heard about them," said Carol, knowing herself for a fool again.

Past experience, she told herself ruefully, had taught her nothing. The thing to do was to let him go and forget him as quickly as possible, before she learned anything about him, before her feeling for him could become anything more than an irrational, momentary impulse. The stronger the bonds of knowledge and interest between them, the more painful they would be to break. And the breaking was inevitable.

The house where she and her father lived was a simple dome-shaped building, its walls and furniture both made of a silicon plastic whose raw materials had come from the ground on which it stood. There were rugs and draperies of a slightly different composition, woven on the all-purpose Household Helper that her father had bought before leaving Earth. They lived comfortably enough, she thought, as

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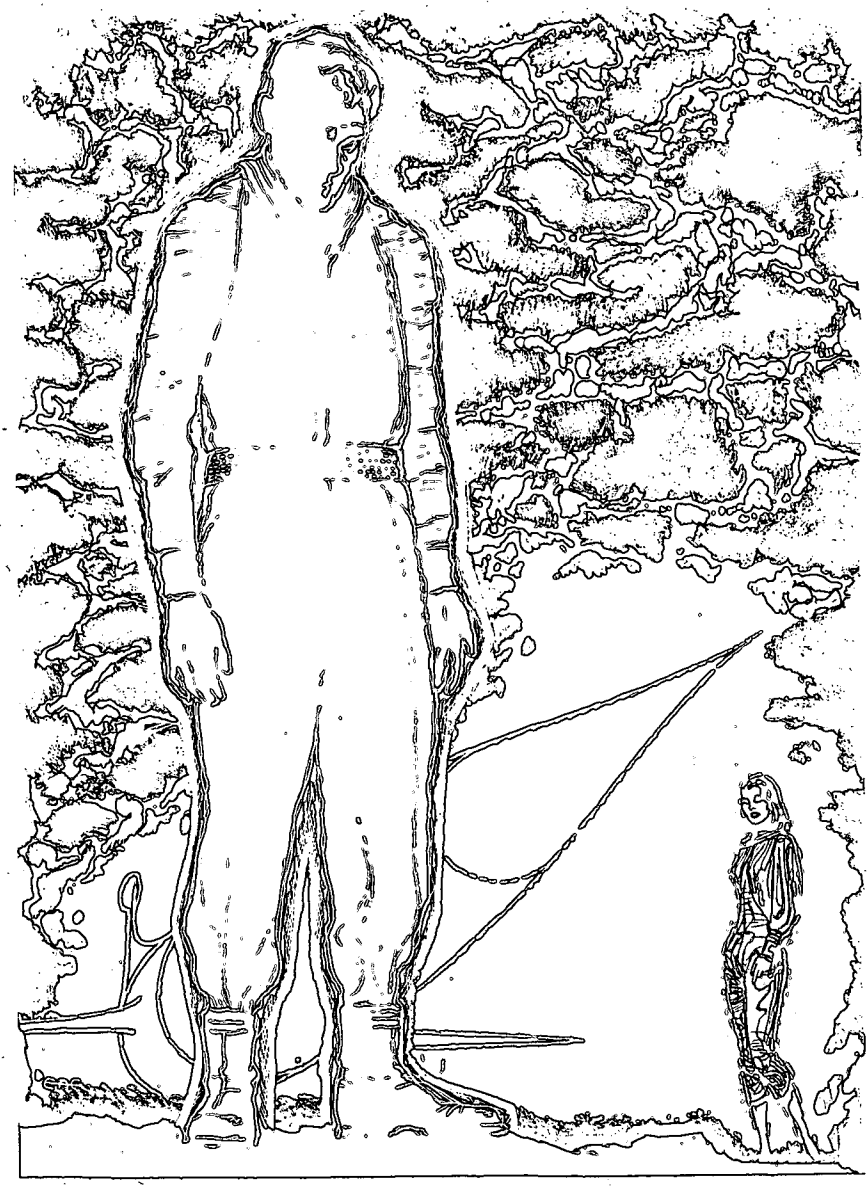

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she led the man in.

But he hardly noticed the house or anything in it. When they reached the library and her father looked up from the book he was reading, only then did the man display interest. The book was a favorite of her father's and it made him unhappy to cut his reading short.

Nevertheless, he turned off the projector, stood up, and said, "Yes, Carol?"

"This man is looking for some — some friends of his, Dad. I thought you might be able to help him."

She held out the picture and, to her relief, her father stared at that instead of at her. Sometimes he was a little too shrewd; if she was making a fool of herself, there was no need for him to know it. He could be a sardonic man and he did not suffer fools gladly, even in his own family. He was of the opinion that she had used up her quota of foolishness with John Burr.

He was shaking his head. "Sorry, I've never seen them. Are you sure they live around here?"

"No," said the man. "I'm not sure. I'm not sure of anything, except that they're my wife and kids. And I've got to find them."

"Have you checked at the District Office?"

"I did that first. They couldn't help me, but they said their records weren't complete yet."

"They're complete enough, I should think. Maybe they don't list every prospector who wanders around without settling down, but they wouldn't be likely to miss a woman and two children. I'm afraid that you're wasting your time looking on Ganymede."

The man's face clouded. "It isn't a waste of my time," he said. "I've got nothing else to do with it. And I have to find them. They need me."

MR. MARSH looked away from the man to his daughter, and Carol was a little slow in avoiding his eyes. "I see," he said, and she had an idea of what he meant by that. He saw too much.

If he knew, there was nothing she could do about it. She said, "Perhaps Mr. —"

She paused, and the man said dully, "Callendar."

"Perhaps if Mr. Callendar would have dinner with us and tell us a little more, we'd be better able to help."

"Not a bad idea, Carol. We should know a little more."

Carol selected a dinner and pressed the button that would start its preparation.

Her father said casually, "You

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are a stranger to Ganymede, aren't you, Mr. Callendar?"

"I'm not sure of that," said the man.

Her father's eyebrows went up.

Carol said, "But you do come from one of Jupiter's moons?"

"I can't remember which one. There are a lot of things that my memory's hazy about. I can't even recall the name of the company I worked for as an engineer."

"That may not be so strange. I find difficulty remembering the school where I taught on Earth. P.S. 654, wasn't it, Dad?"

"P.S. 634," Mr. Marsh corrected briefly.

"You see?" she said. "Do you remember your wife's name? And the names of your children?"

"I wouldn't forget *them*," he said. "My wife's name was Mona." He stared at the wall for a moment, his face without expression. "I can still see the way she looked when I left to undergo treatment. Paul was — let's see, he must be about nine, maybe ten, by this time. And Wilma must be six or seven. I remember how scared she was that time she found a harmless little phytopod. She thought it was going to bite her."

"Phytopod?" said Carol. "We don't have them around here. What do they look like?"

"They're small and furry, and have two feet that look like roots. When they stand still you're likely to mistake them for plants."

"You *do* recall some things," said Carol.

"The little things that don't tell me where to look. I remember the time we went on a picnic —I don't recall how many moons there were in the sky — and the ground began to shake. It didn't do any damage, but Wilma was terrified. Paul took it in his stride, though."

"There aren't any earthquakes on Ganymede," said her father. "If your memory of that incident is correct, you're looking in the wrong place."

"I suppose so," he said. "But what's the right place?"

"Perhaps if you thought of a few more incidents, we might figure it out. It's the little things you don't forget that can be most helpful."

WHAT nonsense, thought Carol, although she kept the thought to herself. The little things can be most *harmful*. They keep the pain, and the memory of pain, alive and vivid. She remembered little things about John all too well — the careless way he wore his clothes, and the way he combed his hair, the cigarettes he smoked, and the

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foods he liked to eat. And the stupid way she had let herself fall in love with him.

She hadn't even had the excuse of its happening suddenly, as it had happened now. She had begun to love John as she had come to know him, disregarding all the evidence of his selfishness, of his genuine inability to care for any one else than John Burr.

Unaware of what was going on in her mind, Callendar was saying, with somewhat more animation than he had previously shown, "I think you're right, Mr. Marsh. I've kept my troubles too much to myself. Maybe you can't actually do anything for me, but it wouldn't hurt me to talk. I should have done my talking long ago. When they found me."

"Where did they find you?" asked her father. "And what did you mean before, when you said you're not sure of anything?"

"They picked me up in a lifeboat, drifting some place between Mars and Jupiter. The motor was off, but the power pile was working, and the air-purifying equipment was on. I was apparently hibernating. I might have been that way for six months or a year."

"And you don't remember —" said Carol.

"There's plenty I don't remember, but as I've said, my memory isn't a complete blank. My wife and I and the kids had settled down in a new colony — exactly where it was is one of the things I forget. I believe now that it wasn't Ganymede. Maybe it was some other moon of Jupiter's.

"Anyway, I seem to recall having some trouble with my health, and being taken onto an interplanetary hospital ship for treatment — L-treatment, they called it. That's where they put me to sleep. What happened after that, I can only guess. The ship must have been involved in some accident. I must have been transferred to the lifeboat."

"Alone?" asked Carol's father.

"No. There were two other patients with me. They were found dead. I was the only one left alive. The bodies of the crew members who transferred us weren't found at all. They might have gone back for more patients and then been unable to get away again."

"Who found your lifeboat?"

"The crew of a freighter, who spotted it drifting across a space lane. They took me on board and revived me. But they were in a hurry and didn't have much time to stay and investigate."

MR. MARSH was thoughtful and silent.

Carol asked, "Weren't there

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any records in the lifeboat?"

"Nobody thought of that, at least not in the beginning. At first, when I regained consciousness, my mind was almost a complete blank. Then I began to remember things, but not enough. I couldn't recall where the colony had been, and after I had recovered enough to be able to get around, I began looking for my wife and children. I haven't come across a trace of them, although I've been on many worlds."

The food had long been ready and waiting. Until now, no one had thought of getting it. He stared as if through the wall and Carol, after she had set the dishes before him, had to remind him of their presence. When he did eat, it was automatically, without enjoyment.

Afterward, her father surprised Carol by saying, "Why not stay with us overnight, Mr. Callendar? We have an extra room, and tomorrow I may be able to give you a little helpful information."

The man's eyes came alive. "You're serious? You think that from what I told you, you'll be able to guess where I came from?"

"I used the word 'might.' Don't get your hopes up too much."

His face fell again. "Thanks for warning me," he said in a flat tone.

When, later on, he had gone to his room, Carol said, "Dad, do you really think you can help him?"

"That depends on your idea of help. Why are you so interested in him? Perhaps you're falling in love with him, Carol?"

"I think so."

"Under the circumstances, that's completely idiotic. Would there be any sense in asking *why* you fell in love with him?"

"Well, he looked so *lost!* I guess it's maternal —"

"As genuine a case of the grand passion as I've ever encountered," he said drily. "Almost as genuine as your previous experience."

Carol flushed. "He isn't like John."

"FORTUNATELY, you are right. Burr was essentially a selfish baby. I can't imagine him spending *his* life looking for a wife and children he had lost. In future, Carol, if you must fall in love at all, do it suddenly. You choose much better that way."

"Yes, I know," she said. "Except for the fact that the wife and children may interfere. But don't worry, Dad. This time I'm not quitting my job and moving several million miles away to try to forget."

"There'll be no need for that." His face took on a troubled ex-

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pression. "You'll have to face your problem right here."

"YOU haven't answered *my* question," said Carol. "Do you really think you can help him?"

"That isn't an easy one to answer. We'll have to prepare him for a shock, Carol. A first-class shock. That's why I wanted to be sure you were in love with him. It may make things easier for him to stand."

"What things?"

Her father hesitated. "Have you ever heard of this L-treatment he mentioned?"

She shook her head.

"I thought not. Carol," he said, and his voice was unexpectedly full of compassion, "you're going to have a very sick man on your hands. It won't be pleasant for either you or me, and it's going to be horrible for him. But it must be gone through. He must be told."

"For heaven's sake, what is it?"

"The L in L-treatment," he said slowly, "stands for longevity. That was what he was treated for. But you see now why it was found to be dangerous and discontinued. The reason you never heard of it is that it was developed and discarded two hundred years ago. Callendar wasn't adrift in space for a year or two, as he thinks. He was adrift for two centuries."

"No! Oh, *no!*"

"That's why the clothes in those pictures seemed odd. They've been in style and out again half a dozen times, with slight changes each time. That is why, furthermore, he can't find his wife and children on any of Jupiter's moons. The moons were first colonized ninety years ago."

"But he says —"

"He'll never see his wife and children again. They've lived their lives and died and been buried in the past. He should have died with them in his own time and not lived into ours."

"No," said Carol, "or I'd never have known him."

She was white and trembling, and her father pulled her to him and let her head rest on his shoulder.

Mr. Marsh said, "Perhaps you're right. I don't know. Anyway, he'll have to be told. And for your sake, I'd better do the telling."

Carol was silent, and they both thought of the sleeping man who didn't know that his old life had ended and that a new life was to begin so painfully in the morning.

—WILLIAM MORRISON

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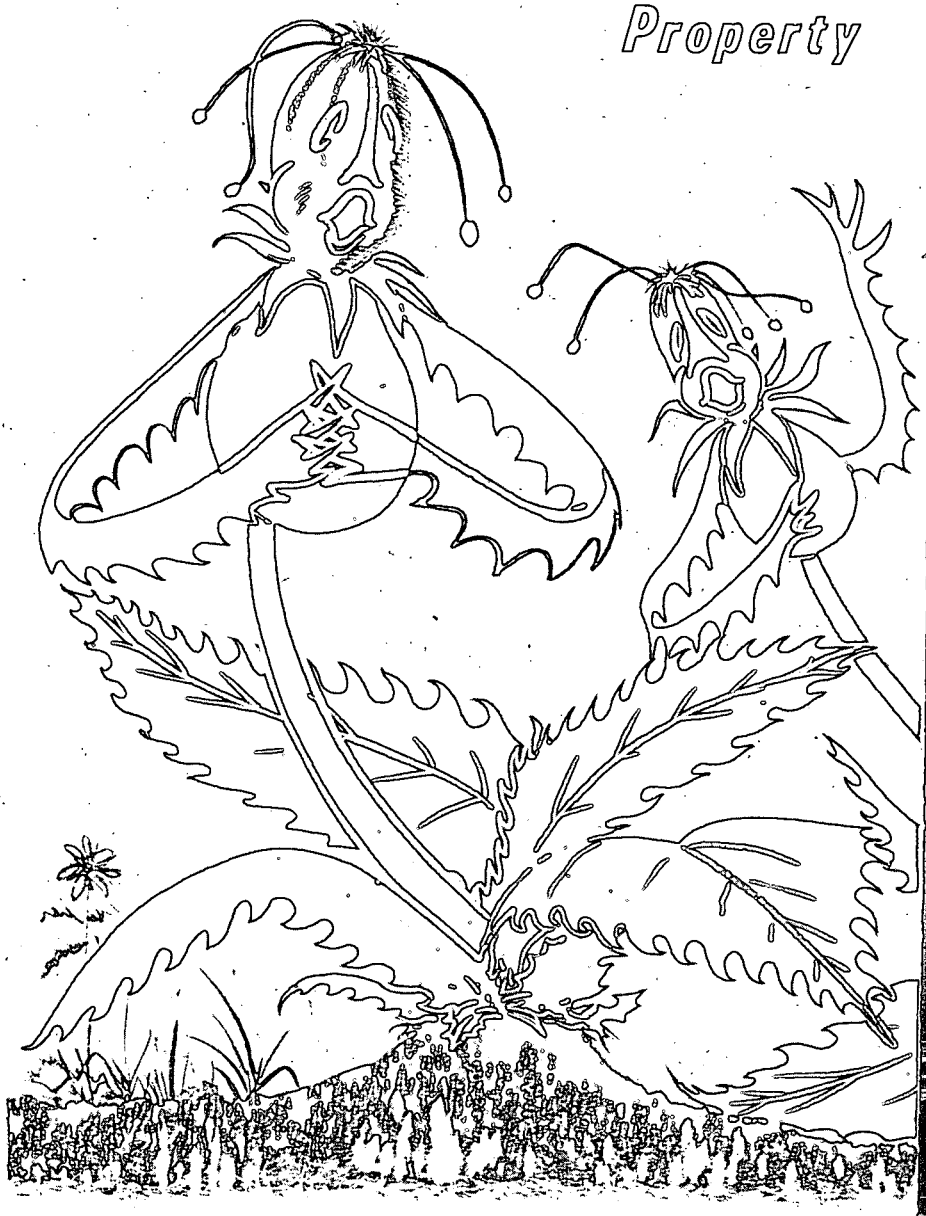
Property



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# of Venus

By L. SPRAGUE DE CAMP

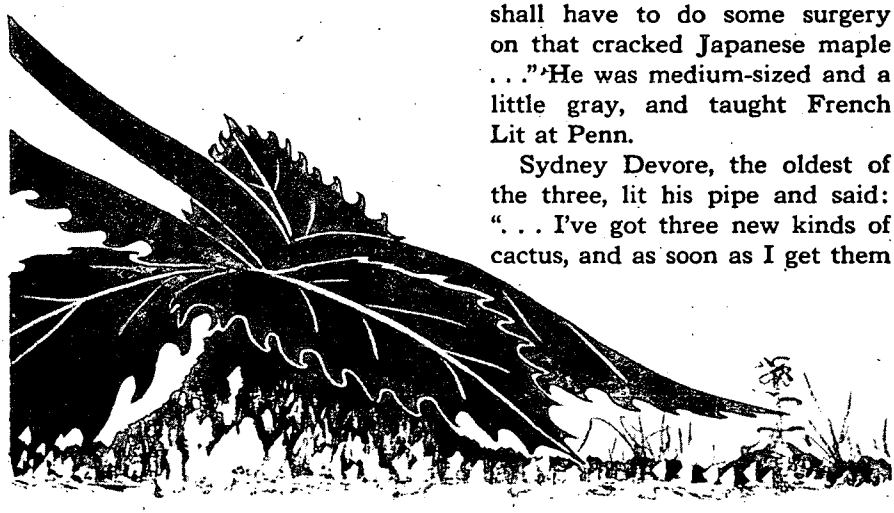
Naturally, botanical specimens from another planet couldn't possibly be like Earth's . . . but there should be a limit to differences!

Illustrated by HUNTER

THE SOUND of three men in loud discussion of planting-plans drew the man from Venus. This was at Mrs. Hort's neighborhood party on a fine May weekend. The forsythia's golden rain had ended; the magnolias had littered the lawns with their petals; the azaleas blazed in orange and purple and the dogwoods in pink and white.

Carl Vanderhoff, on his second bottle of beer and fourth hot-dog sandwich, said: ". . . I can't bother much with annuals this year. I shall have to do some surgery on that cracked Japanese maple . . ." He was medium-sized and a little gray, and taught French Lit at Penn.

Sydney Devore, the oldest of the three, lit his pipe and said: ". . . I've got three new kinds of cactus, and as soon as I get them



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unpotted. . ." He led a retired life as a consulting engineer.

Bill Converse, burly and ruddy, waved his fourth beer-bottle and said: ". . . if there's any screwy plant in the world, trust Sydney to plant it . . ." He was vice-president of the Keystone-Fidelity Insurance Company.

Several of those at the party had objected to Devore's unconventional planting, such as his setting out assorted species of cactus. Vanderhoff had supposed that cactus would not thrive in the dank of a Philadelphian suburb, but these did as a result of Devore's care in keeping weeds and grass away from them and potting them through the winter. As Vanderhoff's own wife had said, Devore lived alone without a wife to keep him within the bounds of convention, but why couldn't he plant decent iris, phlox and chrysanthemums like everybody else?

The cactus made his lot stand out like a sore thumb.

BEFORE Converse could say more about this eccentricity, Mrs. Hoyt's brother, the spaceman, sauntered over. His uniform, unless one looked closely, was like that of a chief petty officer of the United States Navy. Vanderhoff understood that Grant Oakley was in fact some sort of chief mechanic on the *Goddard*.

Carl Vanderhoff braced himself to look interested in Venerian matters, though the flight of the *Goddard* had been so overpublicized, and he had already seen, heard and read so much about it through the normal channels of information, that he was getting bored with it.

"You fellas like to plant things?" said Grant Oakley with a noncommittal smile; a compact, competent-looking little man with bad teeth.

"Wait till my roses come out," boomed Converse. "I've got . . ."

"I'm trying out this new bug-killer, R-47," said Vanderhoff. "It's said to really lick the Japanese beetles . . ."

"Come over to my place after this breaks up," said Devore, "and I'll show you my South American . . ."

As they all spoke at once, Oakley stared with a vague smile until they ran down. Then he said: "How'd you like to plant something from Venus?"

"Oh, boy!" exclaimed Devore. "If I only could!"

"Hm," said Vanderhoff. "Perhaps."

"People would think I was nuts," said Oakley. "I suppose a plant from Venus would come crawling into your house at night like some kind of octopus?"

"No, nothing like that," said Oakley. "The plants of Venus are

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higher developed than ours, but they don't run after you. What would it be worth to you to plant them?"

Devore frowned. "You mean you have some?"

Oakley smiled, dipped a hand into a coat pocket and brought it out. He opened it just enough to show a small fistful of seeds ranging in size from that of an apple seed to that of a lima bean.

"Now," he said, "supposing these *were* seeds from Venus — I'm not saying they *are*, understand — what would they be worth to you?"

Vanderhoff said: "That would depend on what they grew up to."

Devore said: "I thought the Department of Agriculture had a regulation —"

"Who said anything about the Department of Agriculture?" asked Oakley. "I haven't said these were from Venus. But supposing they were, what would you do about it?"

Devore said: "Well, I suppose I ought — no, to hell with that. I want some. But I couldn't pay you anything like the transportation cost."

"The same for me," said Vanderhoff. "How about you, Bill?"

Converse rubbed his chin. "We-ell — if you two take some, I guess I will, too. But none of us are rich, Mr. Oakley."

Oakley shrugged an eyebrow. "Neither am I. I brought these because I've got to have some quick money. How would ten bucks a seed strike you?"

DEVORE whistled. "Suppose you tell us what they are first."

"You'll read all about it when the Department of Agriculture gets out a bulletin. But these little black fellas are the singing shrub. The medium-sized —"

"What does the singing shrub do?" asked Vanderhoff.

"It sings. The blue ones are the bulldog bush. You understand, these are just the names the fellas on the expedition called them. The scientists gave 'em Latin names, but you'll have to read those in the Department of Agriculture Bulletin."

"How about the big red ones?" said Converse.

"That's the tree of Eden. It has the best-tasting fruit ever. Harmless, too. We ate lots of it. It seemed to make everybody happy and grateful. Some called it the stein plant on account of it grows a thing shaped like a pitcher or more like an old German beer stein."

"What does the bulldog bush do?" said Devore.

"It tries to bite, like one of those fly-catching plants on Earth, only bigger. I wouldn't say to plant it if you've got small babies.

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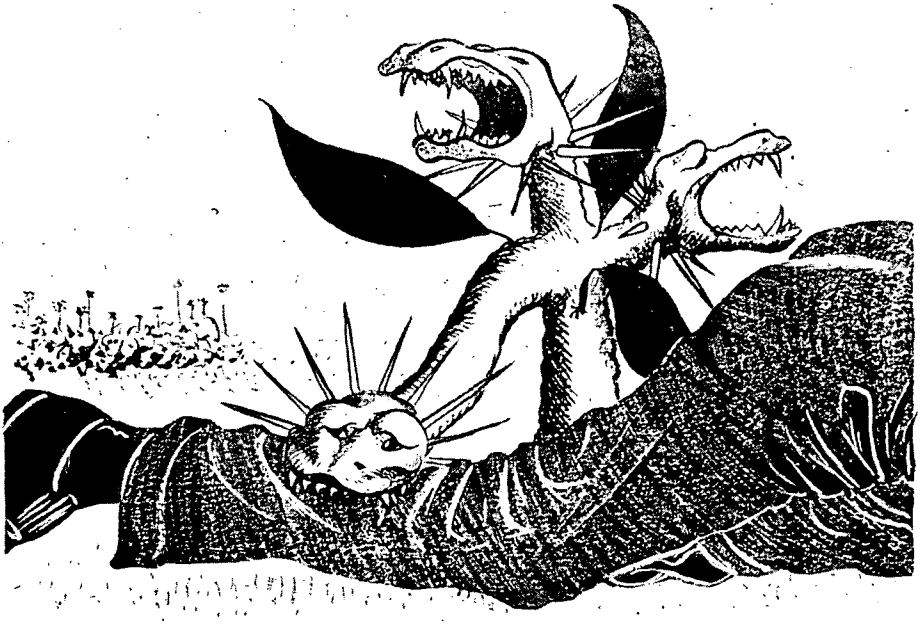
It may bite hard enough to hurt."

"How about growing up and biting our heads off?" Converse wanted to know.

"It only grows so high, and the snappers about like so." Oakley described with his hands a biting organ the size of a pair of human hands. "And it's not that strong. Now how about it? Shall we have a little auction?"

There ensued a long low argument. More beer was drunk and hot-dogs eaten. The Sun went down; the neighborhood's bat came out and flew in circles over Mrs. Hort's party. At last the three householders each agreed to pay Grant Oakley fifty dollars, for which Converse should get the tree of Eden seeds, Vanderhoff all the bulldog bush seeds and Devore all the singing shrub seeds.

They had disputed whether each of them should try to raise specimens of all three species, but concluded that a single extra-terrestrial species apiece would be enough to handle. Vanderhoff would have preferred either the tree of Eden or the singing shrub, but his gardening friends put in their claims for these before he



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had a chance to and pressed them with such vigor that he gave way.

"BRING 'em in before frost," said Oakley. "If they haven't grown too big, that is. These came from the polar regions of Venus. Those are the only parts of the planet that aren't so hot a man has to wear a protective suit. It's about like the equator on Earth. So the plants won't stand cold."

The seeds and money changed hands as Carl Vanderhoff's wife Penelope came up. Bill Converse saw her first and said: "Hello, gorgeous!" with the lupine expression he assumed in addressing his neighbors' wives.

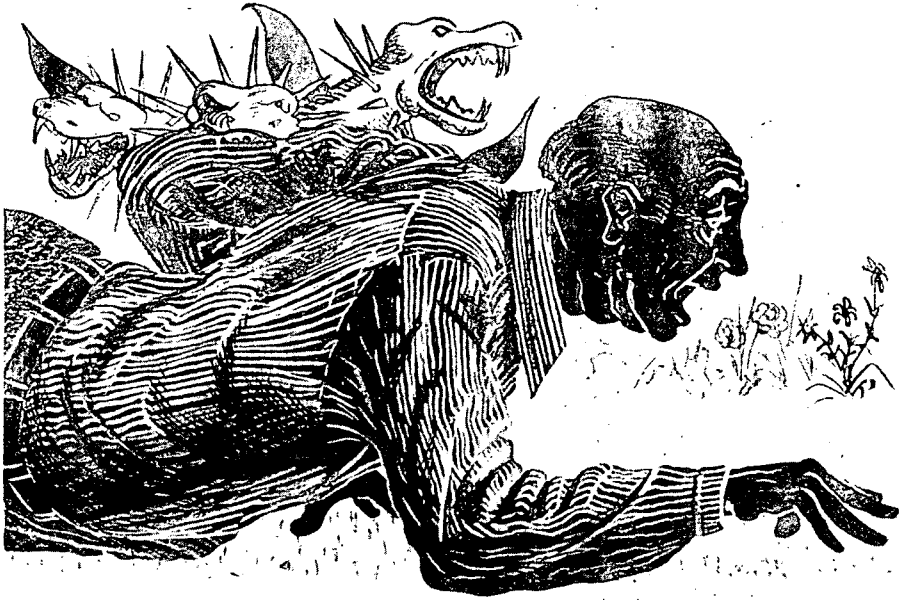
Penny Vanderhoff simpered at him and said to her husband: "Carl, we really have to go. That sitter said she'd only stay till seven."

Vanderhoff slipped his seeds into his pocket and went along.

"What were you talking with Mr. Oakley about?" said Penny Vanderhoff. "Venus?"

"He was telling us about the plants there," said Vanderhoff.

He did not speak of his Vener-



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ian seeds because this would have started an argument. Penny would have scolded him for being eccentric, "just like that crazy Sydney Devore. I don't know what you see in that man . . ."

In moments of fantasy, Carl Vanderhoff liked to imagine himself an ancient patriarch, sitting in a tent with a towel over his head, combing his beard and ordering his wives, children and goats around. In practice, he never got anywhere near this envied state, as his wife and children could and often did outshout him in familial arguments.

Although he was willing to coerce his children by force, Penny always stood up for them, having been indoctrinated with the extreme educational progressivism of the followers of Dewey and Watson. And in these days of easy divorce, there was no question of using force on one's wife.

Penny was not as gorgeous as Converse made her out with his leering compliments, being short and rather squarish of build, though still fairly pretty in a round-faced floral way. But that wasn't the point. He longed to be the power in the household and he didn't stand a chance.

NEXT morning at breakfast, Vanderhoff put on his firmest face and said: "I shall plant some new things today. There will be wire guards around them and anyone who steps on one gets the *derrière* beat off him. *Je suis tout à fait sérieux.*"

There was a condescending chorus of affirmative grunts and vocables filtered through corn flakes.

"And, Dan," continued Vanderhoff, "you left your baseball equipment all over the floor again. Either you clean it up or there'll be no allowance."

After breakfast, Vanderhoff went out to plant his seeds. The neighborhood was waking into its usual Sunday-morning racket. The roar of power mowers was joined by the screech of the power saw in Mr. Hort's basement and the chatter of Mr. Zanziger's electric hedge trimmer. Mr. O'Ryan, hammering something in his garage, furnished the percussion effect.

Carl Vanderhoff walked about, wondering where to plant. If the bushes really bit, it would not do to plant them near the walks; they might grab guests or men delivering things.

He had had a qualm about accepting the seeds for fear they would endanger his children. But since his youngest, Peter, was four and active, he thought he was not running much risk, especially if he put up a guard heavy enough to keep plant and youngster apart.

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Besides, if Peter did get nipped, it would teach him to obey orders.

Vanderhoff decided to plant the seeds outside his picture window, in place of a mass of old jonquils that had practically ceased to flower and that he had been thinking of throwing away.

He put on his rubbers, got out shovel and garden cart and went to work. When the jonquils were out of the way, he dug a hole for each of the six seeds, filled it with a mixture of mushroom soil and fertilizer, trod the earth hard, and finished off the surface with a slight bowl-shaped depression to catch the water.

He watered the six places, stuck a flat stake beside each site with a notation, and put cylindrical wire guards over the spots.

THREE weeks after Vanderhoff had planted his seeds, five little yellow shoots appeared. Vanderhoff naturally did not know that the sixth had just germinated when a beetle grub, inching its sluggish way through the soft earth, had come upon it and devoured it.

Vanderhoff diligently watered his plants. The clouds of Venus had turned out to be ordinary clouds of water droplets, not of formaldehyde as had been feared, and the surface of the planet was quite as rainy as fictional speculators had portrayed it.

At the next session at Sydney Devore's house, Vanderhoff asked Devore and Converse how their Venerian plants were coming along. Devore, who not only lived alone but further fractured convention by never speaking about his past or personal affairs, had a habit of throwing small penny-ante poker parties for the men of the neighborhood. Vanderhoff was the most regular guest. As a thinking man, he found Devore's company congenial. Converse was the next most regular, not because he was a thinking man, but to get away from his wife. Very little poker was played, for they found more pleasure in drinking and talking.

Converse answered: "Only one of my three seeds sprouted, but the thing's a foot high already. Take a look next time you go by my place, Professor." Converse always called Vanderhoff "Professor" with a kind of annoying tolerance, as if being a professor were a disgrace or at least an embarrassing state to admit and he was big enough to disregard it.

"How about yours, Syd?" asked Vanderhoff.

"They all came up, but I can't tell what they'll look like. I planted them down both sides of my front walk."

"You mean those little pink

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things we passed on the way in?"

"Yes. I moved the cactus to make room for them."

THE azaleas went. The iris came and went. The peonies bloomed briefly and the tiger lilies for a longer time. Vanderhoff's bulldog bushes grew with extraterrestrial speed until, one Saturday, Penny said: "Carl, what on Earth are those things? They look like a Venus' fly-trap, but they're such a funny color and so big."

"Those are the plants I bought from Oakley."

"Who? Oh, you mean Mrs. Hort's brother, who went to Venus. Are those Venus plants, then?"

"That's what he said. Tell the children not to poke their fingers at them or they'll get bitten."

"Why, Carl, I won't have such dangerous plants on the place!"

"We're going to have these. Nobody'll get hurt if he does as he's told. I'm going to put heavier guards around the plants and if they get out of hand, I'll cut them down."

"What's that?" said Penny, turning her head. There was a sound like songbirds. "It's funny, but it always sounds as if a lot of birds were singing at Devore's place, even when you can't see any."

"That must be his Venerian plants," said Vanderhoff.

"Well, I should think you could at least have taken the singing plants and given him the biting ones. It would have been more appropriate, if you must have these weird things. Why don't you do like other people, instead of always trying to be smart and different?"

"If you start that again, I'll grow a beard and wear a beret. Then you'll *really* have something to complain of."

Penny went off in a huff, leaving Vanderhoff to work on his plants. He had long tried, with some success, to impress his family with the belief that, though a mild man in most respects, he was inflexible about his plants and terrible in his wrath if one was hurt.

When he had finished gardening, Vanderhoff walked down the street to Devore's house, from which the birdsongs issued. He found Devore squatting before one of the little pink bushes that had grown from his Venerian seeds. At the apex of each shrub grew a brown, convoluted structure something like a flower; beneath it, the stem swelled out into a bladderlike bag.

As he looked more closely, Vanderhoff saw that these structures were making the birdsongs.

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The bladders swelled and shrank while the "flowers" on top quivered and contracted.

"WHAT are you doing, Syd?" asked Vanderhoff.

"Teaching these to say 'good morning.'"

"They can be taught?"

"Within limits. They're imitative, which is why they've been copying the local birds."

"How do you train them?"

Devore held up a can of X-53-D, the latest super-fertilizer. "They love this and I give 'em a spoonful when they say something right. An article in the *Botanical Gazette* says they use these songs the way our flowers use color and perfumes, to attract Venerian flying things for pollenization." Devore addressed the plant. "Good-morning, Mr. Devore."

"G'morning, Mis' Dwore."

"Good plant!" said Devore. He sprinkled a spoonful of X-53-D around the base of the bush and wetted it down with his watering can. "Reward of merit."

"I suppose you'd call that speaking with a Venerian accent," said Vanderhoff. "I must make a phonetic transcription of it some time. How do they know you from anybody else?"

Devore shrugged. "Sound or smell, I suppose. They don't have any eyes, of course. Are your bushes doing any biting yet?"

"They try to. Each pair of jaws has a sort of antenna sticking up above it, like a radar antenna. That seems to be how they sight on their prey."

"Can they draw blood?"

"I don't know. One got my finger the other day; quite a pinch, but it didn't break the skin."

"What do you feed them?" asked Devore.

"They seem to like tuna-fish best. Steak and ham they find indigestible."

"Hi, Professor!" came the loud voice of Bill Converse. "Hello, Syd. How's your crab-grass this morning?"

"It's beginning to show up as usual," said Devore. "How's your bouncing betty?" For Converse, despite his noise about his expert gardening, had never eradicated all the soapwort or bouncing betty with which his flowerbeds had been overrun when he bought his house.

"You needn't kid me," said Converse. "After all, bouncing betty *does* have a flower."

"Yeah," said Devore. "That miserable weed. You're just lazy." He lowered his voice. "How's the tree of Eden doing?"

Converse rolled his eyes. "It's as tall as I am. C'mon over and look at it."

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THE tree of Eden, over six feet high, was a plant of curious shape. A stubby trunk, about three feet tall and four or five inches thick, ended abruptly in an organ that hung down in front of the trunk and, spraying up and out behind it, a fan of slender stems of finger-thickness, each bearing a double row of small orange leaves.

Vanderhoff had a fleeting impression of a sort of vegetable peacock with its tail spread. The organ in front had a pitcher-shape, rather like that of a terrestrial pitcher-plant, only larger, complete with lid. This vessel was now as big as a bucket. The lid was grown fast to the top of the vessel so it could not be raised.

"The funniest thing," said Converse in the same low voice, "is not only how fast it grows, but that it has such hard wood. Normally you expect anything that grows that fast to be soft and porous."

He bent down one of the stems for the others to feel. It did seem to be made of strong hard wood.

Vanderhoff said: "Maybe these little berries are going to be that wonderful fruit Oakley told us about."

"Uh-huh," said Converse. "At this rate, they ought to be ready to eat by September."

Devore said: "Let me suggest that you fence the tree off, or the kids will have eaten all the fruits before we old dodderers get a chance at them."

"Good idea, pal," agreed Converse. "Tell you what — when they're ripe, I'll throw a neighborhood party and we'll all eat them."

WILLIAM Converse did fence off his tree, which continued to grow like Jack's beanstalk. The neighborhood's beds of phlox came out in crimson and white. Vanderhoff's bulldog bushes grew larger and more voracious. Penny Vanderhoff got a gashed finger feeding one and had a row with her husband about getting rid of them.

Curiously, neither the bulldog bushes nor the tree of Eden aroused comment. Vanderhoff's picture window was at right angles to the street, and the bushes, planted beneath this window, could not be seen from the street. Vanderhoff had threatened his children with dire penalties if they told outsiders about his marvelous plants, and apparently they had obeyed him.

The tree of Eden was in plain sight, but, while its strange shape caused many to ask Converse about it, they accepted his casual word that "Oh, that's just a South African stein plant."

Sydney Devore's, however,

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could not be overlooked. First his singing shrubs twittered in imitation of the birds they heard. One, in fact, took to hooting like a screech owl, except that the plant hooted all day instead of at night like a well-regulated owl.

Then Devore taught them to greet him with "Good morning, Mr. Devore" as he came down his walk. When his neighbors asked him what was happening, he made jocular or enigmatic remarks, such as asserting that he had wired the plants for sound. But the plants' behavior was so egregious that the explanations were not believed. As the plants grew, their tonal range and intelligibility increased.

Devore taught them a more elaborate repertory. He hopped up the morning greeting from a mere "Good morning, Mr. Devore!" to such phrases as "All hail, Your Imperial Highness!"

WHEN their greetings were as magniloquent as the most egotistical paranoid could desire, Devore started teaching the bushes to sing *Clementine*. He had trouble getting them to sing in unison, but he persevered. Evening after evening, the neighborhood gathered to see Devore striding up and down his walk, tapping a little Indian drum and exhorting his plants.

"Just wait," said Penny Vanderhoff to her husband. "Any day now, a swarm of F.B.I. men and newspaper reporters will come down on us. They'll take you three to jail and the reporters will write stories that'll cost you your job."

But that was the summer so much happened — the near-war between India and China over Nepal, the death of President Tringstad in an airplane crash, and the return of the *Bergerac* from Mars — that the newspapers had their attention elsewhere.

At any rate, the mums and gladioli were out and nothing had yet befallen when Bill Converse, after tasting a fruit of his tree of Eden, pronounced it ripe and invited the neighborhood to a Saturday evening party to eat the whole crop.

This was the weekend after Labor Day. On this weekend, the International Council of Language Teachers' Associations met in New York City. Carl Vanderhoff went to New York as a delegate, intending to return Sunday evening.

It also happened that Bill Converse read in *Popular Gardening* an article about Venerian plants in general and the tree of Eden in particular. Enough of these plants had now been grown by the Northern Regional Research Laboratory of the Department of Agriculture at Peoria, Illinois, to

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allow some conclusions about them. But Converse, who glanced more and more through his own windows toward the Vanderhoffs' house, said nothing about this even to his gardening friends, Devore and Vanderhoff.

THE day of the Converse party, Penelope Vanderhoff telephoned Mrs. Converse. "Mary? I'm so sorry, but I can't come to your party this afternoon."

"Oh," said Mary Converse, "isn't that too bad?"

"My sitter has stood me up and Carl's away, so I have to stay home," Penny explained.

"Aren't they old enough to be left?"

"Well, Dan is eight and Eleanor six, but if you leave them alone they fight, scream, chase each other, break windows, upset furniture and make a shambles of the place. I can't imagine why — I've always let them do as they pleased, like it says in the book — but that's how it is. So I'll have to pass it up."

When Mary Converse told her husband, he said: "Oh. Too bad. I'll take her some of the fruit."

"It'll be all right if that's all you do over there," said Mary Converse.

"Damn it!" shouted Converse. "I don't see why I put up with your groundless suspicions!"

The refreshments at the Converse party consisted of martinis and tree of Eden fruits. The guests picked the fruits directly from the tree, from which Converse had removed the fence. The fruits looked like plums, but proved to be without pits. They gave out a delicious, enticing smell that had the guests drooling by the time they received their portions. The taste caused gasps, cries, closed eyes.

The tree now towered twelve feet tall, while the pitcherlike organ in front was as large as a laundry hamper. The lid of the organ had come loose from the rest, except for a hingelike connection in the back. The edges of the lid curled up a little, so one could look down into the empty body of the pitcher.

The spray of slender stems bore hundreds of fruits. Any lesser number would have been quickly consumed. The guests hardly bothered with their cocktails in their rush to gorge themselves on Venerian fruits. When the lower branches of the fan had been stripped, Bill Converse, his face red from martinis, lugged a stepladder from his garage and climbed it to hand down more fruit.

Converse did not eat any himself. When a lull in the demand allowed him, he took a small paper bag from his pocket, unfolded it and dropped a dozen of

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the fruits into it. Then he quietly came down from the ladder and walked away from the party toward the Vanderhoff house.

There he rang the doorbell. Penelope came. Converse said: "Here's some fruit, Penny."

"Oh, thank you," she said. "Won't you come in?"

"Sure. Maybe you'd like to put those on a plate and eat 'em now."

Penelope got out a plate, dumped the fruits out on it and ate one. "My, these *are* delicious. I've never tasted anything like them. Won't you have one?"

"Thanks," said Converse, "but I've had all I can hold."

BACK at the Converse party, guests, stuffed with fruit, were sitting and standing about lethargically, wiping the juice of the fruits off their hands and sipping martinis. The only fruit yet uneaten were a few on the highest parts of the tree, which could not be reached by the stepladder.

Two men walked slowly up the walk, peering about. One was lean and hatchet-faced; the other short and stout with thick-lensed glasses. While all the male guests were in sport-shirts, the newcomers wore coats.

The shorter one said: "There's the house and that's one of the plants."

The two drifted quietly up to the crowd around the tree of Eden and the taller asked Mr. Zanziger: "Excuse me, but which is Mr. Converse?"

Zanziger answered: "Bill isn't here just now. He went over to the Vanderhoff house."

"Are Mr. Vanderhoff or Mr. Devore here?"

"Mr. Vanderhoff isn't, but I think Mr. Devore — yeah, that's him." Zanziger pointed to the square-jawed, gray-haired figure with the pipe.

Mary Converse said: "I'm Mrs. Converse. What can I do for you?"

The hatchet-faced man said: "I have here a warrant for your husband's arrest. Also for Mr. Vanderhoff and Mr. Devore. Here are my credentials." The man produced the badge of a United States deputy marshal, and added: "My name is Jacobson, and this is H. Breckenridge Bing of the Department of Agriculture. Where —"

Devore stepped up. "Did somebody say I was wanted?"

"I'm sorry to say you are," said Jacobson, producing more papers from his inside coat pocket. "Here's the warrant for your arrest on the charge of buying articles whose importation is forbidden by the Plant Import Control Act of 1963, as amended 1989. Now if —"

"Why, I don't know what

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you're talking about," said Devore with an exaggerated expression of innocent astonishment.

"Ahem," said the short stout man. "He means that *Amphorius tentatius* —" Bing indicated the tree of Eden — "as well as several specimens of *Faucifrons mordax* and *Cantodumus mimicus*. Our investigations show —"

Devore broke in. "Are you the H. Breckenridge Bing who wrote in the *Botanical Gazette* on the reclassification of the Pteridophyta in the light of recent paleobotanical evidence?"

"Why — uh — yes."

Devore shook the man's hand. "That was a swell piece, but I never thought I'd be arrested by the author."

"Well — er — I assure you I would have preferred not to be a party to your arrest, but they sent me along to identify the contraband plants."

JACOBSON said: "If you'll show me where Mr. Converse and Mr. Vanderhoff are, I'll run you down to the Federal Building in my car and you'll be out on bail in a few minutes."

"What will they do to Mr. Converse and the others?" asked Mary Converse.

"Probably just a fine," said Jacobson.

"Oh," said Mary Converse in a disappointed tone.

The deputy marshal continued: "It depends partly on whether they're cooperative witnesses in the prosecution of Grant Oakley, who sold them the seeds. He's the one who we'll really throw the book at. He's under arrest now."

"My brother in jail!" cried Mrs. Hort, but nobody heeded her.

Devore asked: "I suppose the Department of Agriculture will send a truck around to gather up our Venerian plants?"

Bing's eyes blinked behind their spectacles. "That's right. It's bad enough to bring in an exotic plant from some place on Earth when its properties aren't fully known, and a hundred times more risky to bring in one from another planet. You never know what might happen. It — uh — might spread all over, like the prickly-pear cactus in Australia. Or it might have a disease that would get loose and wipe out the wheat crop."

"Um," said Devore. "I hadn't thought of that."

"Come on, Breck," said Jacobson. "Show me the Vanderhoff house."

A guest named Dietz, who had had several martinis too many, muttered: "Don't worry, you beautiful plant, we won't let these guys take you away from us."

H. Breckenridge Bing con-

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tinued: "Now this *Amphorius*, for instance, has a strange property. I suppose you know that the biochemistry of the higher Venerian organisms turned out to be almost the same as that of terrestrial vertebrates?"

Devore nodded vigorously; the other hearers in more tentative fashion.

"Well, you remember that in the 1970s, Petchnikov isolated gratisone, the gratitude hormone, which is secreted by the pineal gland. It occurs in such minute amounts that it had been overlooked, but it controls animal behavior somewhat as prolactin stimulates mother-love. It's one of the things that makes community and family life possible. Now the fruit of *Amphorius* contains significant amounts of gratisone, or a substance almost identical with it. The result is that anybody who eats an *Amphorius* fruit is soon seized by an irresistible desire to please the thing or person from whom the fruit was received. If you eat it off the tree, you want to please the tree."

"HEY, Breck!" said Jacobson, tugging at Bing's sleeve. H. Breckenridge Bing was no man to relinquish an audience for anything less than a convulsion of nature. He continued: "Now *Amphorius* is a carnivorous plant, like *Faucifrons*, but instead of snatching its prey, it persuades the prey to feed itself to the plant. Small vertebrates who eat the fruit climb into the amphora —" Bing indicated the steinlike structure — "and are digested. The highest form of Venerian life, the yellow gibbon-like *Sauropithecus xanthoderma*, is too intelligent to thrust itself into the amphora. Instead, the tribe seizes the weakest member as a sacrifice to the plant and thrusts him into the vessel.

"If, on the other hand, you receive the fruit from another person, you —"

"My gosh!" cried Mary Converse. "That no-good husband of mine took a bag of the things over to Penny Vanderhoff! Three guesses what he's up to!"

Dietz, the drunken guest, said: "And that's what we ought to do to Mr. Bing and Mr. Jacobson here. Nothing's too good for our tree, not even a Federal dick."

Bing gave a forced smile. "I don't think human beings would go to the extremes of the Venerian lizard-monkey —"

"Oh, wouldn't we?" said another guest. "Tear up our plant and take it away, will you?"

"Now look here —" said Jacobson.

"Into the jug with them!" yelled a guest, and the cry was taken up. The circle began to close in on the Federal men, who

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backed hastily toward the street.

Deputy Marshal Jacobson drew a pistol from under his armpit, saying: "You're all under ar —"

Standing on his right was young John S. Mosely, expected to be Penn's star halfback during the coming football season. Moseley let fly a kick that sent the pistol thirty feet into the air, to fall among Converse's pachysandra.

The guests closed in, clutching.

There was a crash of glass from the Vanderhoff house, but nobody heard it.

CARL Vanderhoff returned home Saturday evening instead of Sunday as he had planned. He delivered his paper Saturday morning; he saw everybody he really wanted to see by the end of Saturday's lunch; he discovered that the meetings and papers scheduled for Sunday were of little interest; finally, Professor Junius White of the University of Virginia offered him a lift home if he would leave Saturday afternoon.

The thought of saving both train fare and a night's hotel bill, and of getting home in time for the tail-end of the Converse party, decided Vanderhoff to leave early.

He walked the half-block from where he was dropped by White, who had declined an invitation to stop in. He marched up to his front door, entered and dropped the briefcase containing his notes, pajamas and other equipment for the Conference. He almost tripped over young Daniel's lightweight baseball bat, clucked with annoyance, leaned the bat against the corner, and made a mental note to fine Daniel.

Then he filled his lungs to shout: "Hello, family!" but closed his mouth and let his breath out as muffled sounds of human activity came from the living room.

Frowning, Vanderhoff took three steps to the threshold. On the sofa, his wife sat in hot, amorous embrace with his neighbor Converse.

Converse looked up at the slight sound of Vanderhoff's entrance. Vanderhoff stared blankly. Then the habits of a lifetime started to curl his lips into a cordial smile of greeting, while at the same time a rising fury distorted this automatic smile into something else — an expression at which Converse looked with visible horror.

Vanderhoff took a step forward. Converse, though he outweighed the professor of French Literature by twenty pounds, tore himself loose from Penelope, looked furtively around, and crashed through the window.

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There was a scrambling in the shrubbery outside. At the same instant, from the other direction came the cries and footfalls of a crowd pursuing something along the street, but Vanderhoff's attention was drawn by a loud cry from beyond the window, followed by the yell: "Ow! Help! It's got me!"

Vanderhoff hurried to the window.

Converse had fallen among the bulldog bushes, which had instantly seized him. Two of the jaws had grips on each of his legs, or at least on the trousers that clothed them, while a fifth held a fold of his sport-shirt.

Converse, on hands and knees, had crawled as far out of the clump as he could and was trying to get farther, while the other jaws of the bushes lunged and snapped at him like the heads of snakes.

He had knocked over a couple of the wire guards that Vanderhoff had set up in front of the bushes. His right hand had blood on it, apparently from a cut sustained when he broke the window. Fragments of glass, reflecting the golden sunset, gleamed on the frantically trampled ground among the bushes.

VANDERHOFF stood with pursed lips, contemplating various kinds of assault. If he merely used his fists, Converse would grab him and probably give him a worse beating than he inflicted. Then he remembered Dan's bat. He strode into the hall, picked up the bat, went out the back door, and came around to where Converse sprawled in the grip of the bushes.

"Hey!" cried Converse. "Don't do that, Carl! Let's be civilized about this! I didn't mean any harm! I was just —"

The sound of a blunt instrument on a human skull ended his explanation. Converse yelped and moaned, but could not crawl back among the bushes lest worse befall him.

As Vanderhoff stepped back, sounds from the street attracted his attention. He hurried around the corner of his house and saw a strange procession winding toward the Converse home.

First came Sydney Devore, beating his Indian drum. Then came four neighbors, each holding one limb of a short, fat man who struggled. Then came the other neighbors, male and female, moving in a fashion that resembled one of the more athletic Latin-American dances.

As the line passed Devore's place, his singing shrubs burst into *Clementine*.

Vanderhoff found these sights and sounds so strange that, foregoing further revenge for the mo-

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ment, he followed the procession with the bat on his shoulder.

The marchers danced up to the Converse house. One guest raised the lid of the pitcher of the tree of Eden, while the four who held the little man prepared to thrust him in.

Vanderhoff caught up with the head of the procession and asked Devore: "Hey, Sydney, what's going on? Are you all crazy?"

"No-o, we're just going to reward the tree for its lovely fruit."

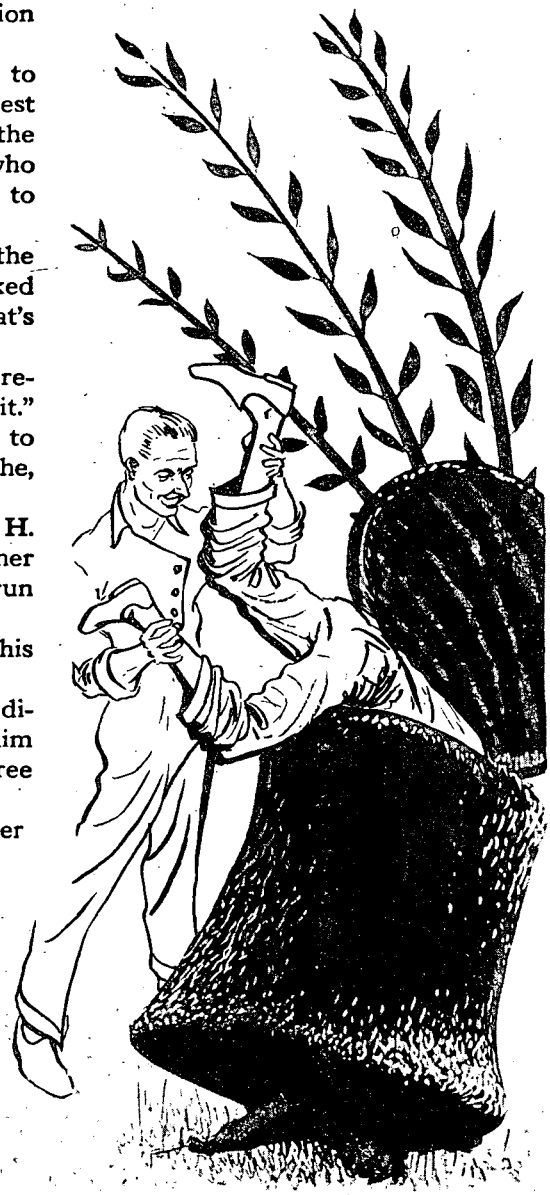
"You mean they're going to sacrifice this man? Who is he, anyway?"

Devore explained about H. Breckenridge Bing. "The other one got away. He could run faster."

"But what'll happen to this one?"

Devore shrugged. "He'll be digested, I suppose. Serves him right. It should stimulate the tree no end."

"You're insane," said Vander



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hoff, and pushed his way through the crowd to the tree.

The four stalwarts had finally inserted Bing into the amphora, despite his struggles and the tightness of the fit. Muffled cries came from inside. Bing's fingers could be seen curled over the edge of the pitcher as he tried to force his way out, but the plant now held down the lid by its own mechanisms. The amphora remained closed, though it bulged this way and that as Bing kicked and butted.

"GET away!" said Vanderhoff, shoving the Converses' guests aside and grasping the edge of the lid.

"Wait, you can't do that!" Dietz cried, seizing Vanderhoff's arm. "Leave our plant alone or we'll feed you to it, too!"

Vanderhoff resignedly hit Dietz over the head with his bat. As Dietz staggered back, holding his head, several other guests rushed at Vanderhoff. He waded in with the bat, cracking arms, heads, and knuckles with such verve that the attackers fell back, leaving the football-playing Moseley unconscious on the lawn.

Vanderhoff then returned to the tree of Eden, keeping an eye cocked for another rush. When heaving on the lid had no effect, he struck the amphora with his bat. This induced a yell of an-

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guish from inside, but did not loosen the plant's hold.

Then Vanderhoff got out his pocket-knife and attacked the hinge of the stein-lid. He drew it across the grain again and again. After he had sawed half an inch into the structure, he found he had weakened the hinge enough so that he could raise the lid.

Bing climbed out. His glasses were gone and his scanty hair was awry. His skin was covered with red spots and his clothes were stained by the tree's digestive juices.

He peered nearsightedly at Vanderhoff. "Did you get me out? Thanks. As for the rest of you —"

Mary Converse shook her head and said: "I don't know what could have got into us, Mr. Bing. I'd never do such a dreadful thing."

"Gratisone got into you, that's what," said Bing. "Now you see why we can't let just anybody plant extraterrestrial plants."

The others, too, seemed to be coming out of their madness. Mr. Hort said: "You must let us pay to have your suit cleaned."

Dietz said: "We'd better buy him a new suit. The plant's digestive juices will eat that one full of holes."

It was finally agreed that Mr. O'Ryan should act as banker for the neighborhood and assess them whatever was needed to repay the damages sustained by Bing. Just as this agreement was reached, one of the township's patrol cars drew up. Out got Deputy Marshal Jacobson and the two local policemen.

Jacobson growled: "You're all under arrest for forcibly intimidating a United States officer!"

"They couldn't help it, Jake," said Bing. "It was the fruit. I'm not going to press any complaints."

"Why not?" demanded Jacobson.

"Well, Mr. Devore said he liked my article. I didn't know anybody had even read it."

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CARL Vanderhoff returned home late that evening, after he and Devore had departed in Jacobson's official car and Converse, released from the bulldog bush, in an ambulance.

He told his wife: "They let me sign my own bond. It seems I'm something of a hero for rescuing that little botanist, so I shall be let off easily. And Bill never said a word about me; he just let them think it was the bushes that beat him into a pulp. He'd better! And now what have *you* to say?"

"I — I don't know how to explain — I must have gone out of my head — I never loved anybody but you —"

"That's all right," said Vanderhoff, and told her about gratisone. "Now that that's over, send those kids in here. Dan is going to be penalized for leaving his bat on the floor, and the whole outfit will be run on orderly lines from now on. No backtalk, either."

"Yes, dear," said Penelope.

"And if I feel like growing a beard tomorrow, I'll grow one." Vanderhoff's picture of himself as an ancient patriarch, sitting in his tent and ordering his wives, children and goats around, might not last. The family would probably wear him back down to his normal mild self.

But he meant to enjoy his authority while he had it.

—L. SPRAGUE DE CAMP

FORECAST

Next month's installment of PREFERRED RISK by Edson McCann, the winner of the $6,500 Galaxy-Simon & Schuster novel contest, shows how explosive ideals are when they're shattered. Insuring all of society against every possible danger is a noble policy, but there is something Wills never thought of — who is the beneficiary? There must be one, of course, and he intends to find out who it is . . . and the deadly search makes him a poor insurance risk indeed!

Accompanying this exciting prize-winning serial is William Tenn's THE FLAT-EYED MONSTER, a novelet pinwheel of unusual ideas, strange viewpoints and chilling suspense — the sort of incandescent literary display we've come to associate with Tenn stories. The only thing wrong with them is their frustrating scarcity. If you want more Tenn stories — and who doesn't? — send in enough letters to power that reluctant typewriter of his!

Daniel F. Galouye takes you along on a novelet trip to his puzzling and haunting COUNTRY ESTATE, where you'll meet a race of — that's the whole dismaying trouble: there is no category for them whatever!

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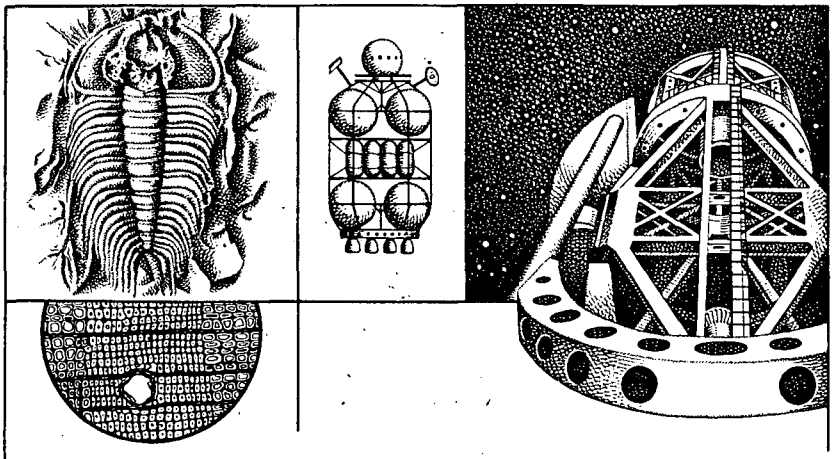

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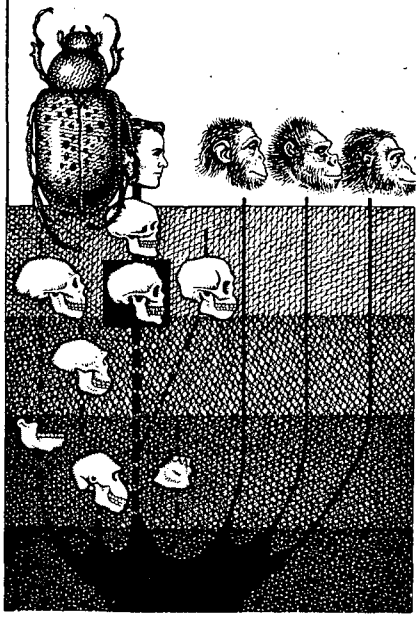

By WILLY LEY

THE ORBITAL (Unmanned) SATELLITE VEHICLE

THE TIME has come when humanity is capable of throwing its first artificial satellite into the sky, and our cover shows Mel Hunter's idea of how it might be done. It is a rather startling idea, combining some elements one would not normally combine that way. But there is at least one good reason for this combination, though it may not be a decisive reason. However, before I go into this with some more detail, the prob-

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lem itself needs some explaining and clarifying.

As I told some time ago in another column in GALAXY, the idea of the artificial satellite grew slowly, even though its total age is not much over a generation.

When Prof. Hermann Oberth first published his rocket theory in 1923 and 1925, he mentioned that it might be worthwhile to put a manned rocketship in an orbit around Earth in order to pursue a few interesting research projects. He went on to say that a very large rocketship might be left in such an orbit while the pilot returned to the ground by means of a smaller landing rocket. It was on the basis of this suggestion that the concept of the manned space station was developed through the years, culminating in Wernher von Braun's space station project, which was published for the first time several years ago.

INTERESTINGLY enough, nobody, for a long time, thought of an unmanned satellite. Otherwise the rocket pioneers had rather definite ideas on how "the art" would progress. It would begin with small liquid fuel rockets of which nothing was expected except that they functioned at all.

Once one had functioning liquid fuel rockets, one could study them for improvements and one would, in time, arrive at the first useful item: the instrument-carrying high-altitude research rocket. The high-altitude rocket, in turn, would be the foundation for the long-range rocket (either as a military weapon or a mail carrier or both) and then, when the long-range rocket had grown big enough, it would turn into a piloted rocketship which could rise beyond the atmosphere and, if desired, take up an orbit around Earth.

These phophecies of thirty years ago have not only largely come true — they even came true in just about the manner and the order foreseen. The item missing in the early forecasts was, as has been mentioned, the unmanned satellite. I can, in retrospect, think of a few reasons why nobody thought of it.

At the time when Oberth and others talked about high-altitude research rockets, the idea was still that the rocket and its instruments would return to the ground by means of a parachute, or by separate parachutes if this should turn out to be more practicable. Then the instruments would be picked up and their records examined. In reality — even though some of the smaller types of liquid fuel rockets have been recovered by parachute in the meantime — this is not the method generally followed.

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During the time needed by the liquid fuel rockets to grow to the necessary size to become high-altitude research rockets, another technique grew up, too, the one now called "telemetering." In principle, it consists of hooking up the instruments with an automatic radio transmitter so that the instrument readings are broadcast and received and recorded on the ground while the rocket is still climbing.

Without such telemetering, an unmanned artificial satellite would have seemed useless. What would have been the use of throwing a package of instruments into an orbit around Earth if the only way of recovery would have been by manned rocketship? If you had to build a manned rocketship for this purpose, it was far more logical to expect the manned ship to take the readings in the first place.

BUT now we do have telemetering and that changes the whole picture. A package of instruments circling Earth could report to what extent it was warmed by the Sun and how much (and how fast) it would cool off when in the shadow of Earth. Such a package could count the number of cosmic rays encountered and report it to the ground station. It could count, and report, the number of impacts of cosmic dust particles and one could even go so far as to divide the outer skin into a number of "reporting areas" so that one could get a good idea of the distribution of cosmic dust impacts.

It has also been suggested to make a small pressurized cabin with an experimental animal in it a part of the instrument package, for the behavior and reactions of the animal over a period of several days of apparent weightlessness would be very worth while knowing. (At the end of the observation period, the animal could be killed instantly and painlessly by having a timing device release hydrocyanic acid into the compartment.)

In addition to these general problems, an artificial satellite could be used with probable success to attack a few special problems. If the artificial satellite did not circle Earth over its equator, but had been placed into an orbit cutting across at a slant, its whole orbit would slowly be turned around. This is technically known as the progression of the nodes and the rate of this progression would furnish us with rather precise information about the volume of Earth's equatorial bulge.

An artificial satellite placed into an orbit which leads over both magnetic poles could be specially equipped to tell us more about

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Earth's magnetic field. Incidentally, it would also provide a great deal of useful knowledge about the cosmic rays and their distribution in Earth's magnetic field.

If we had one artificial satellite moving at a certain height over the equator and equipped to report cosmic dust particle impact, and another artificial satellite, equipped in the same way but moving in an orbit which passes over both geographical poles, we would quickly find out whether there is a higher accumulation of cosmic dust over the equator (or in the plane of the ecliptic), which is a theoretical possibility.

Another and rather obvious job for an artificial satellite would be to demonstrate how much drag is caused at a given height by the air molecules — one can't very well call it atmosphere — still present. Right now, you won't find anybody who'll be willing to give definite figures for residual drag at, say, 180 miles. But you'll find a large number of people who would part with a month's pay, if necessary, to find out.

The method of finding out would be simplicity itself — put an artificial satellite into an orbit 180 miles above the ground and watch it carefully. Residual drag will make its orbit shrink — and cause it to burn up in the atmosphere like a meteorite in the end — and the rate of shrinkage will provide the figure for the drag. Of course, once this has been solved for the 180 miles mentioned, the experiment might be repeated for 250 or 300 miles. The goal is still the manned space station and engineers want to be very sure that there is no observable residual drag at the height where *that* is going to be built.

IF YOU have followed carefully, you'll have noticed that quite a number of the problems to be solved do not require reporting instruments. In various cases, the answer can be found by observation of the orbit assumed by the satellite; the instrumentation would report on something else. This means that the first artificial satellite — or possibly the first two or three — do not need to be instrumented. Their very existence would do the job.

Hence the fairly recent concept of the *un*-instrumented artificial satellite. We would learn something (something, I wish to stress, that cannot be learned any other way) if we merely threw a bale of cotton into an orbit around Earth. Obviously such a "bale of cotton" would be cheaper by far than a complicated instrument package and in all probability it will cost less fuel to throw it into an orbit.

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All that is really required of the first one is that it can be observed from the ground visually and photographically and that it will give a radar echo.

How large would it have to be for this purpose?

I know from lecture experience that the size thought to be necessary for observation is always wildly overestimated. Recently a reader sent me a newspaper clipping about an amateur astronomer who said that he believed that he had discovered a second moon of Earth. The clipping went on to tell that the distance estimated was 400 miles above the ground and that the amateur astronomer stated that it was quite small, "possibly less than a hundred feet in diameter." I have put this sentence in quotation marks because it is not clear from the article whether this was a verbatim quote or a remark by the newspaper reporter himself.

The answer to the whole story is that a second moon of Earth, moving at a distance of 400 miles and about 100 feet in diameter, would have been discovered a long time ago because under favorable conditions, at dawn and at dusk, it would be a naked-eye object which might be faint but would be conspicuous because of its visible movement.

What is really possible with modern instrumentation (and you don't have to think of the 200-inch reflector or the 48-inch Schmidt camera) has recently been told by Clyde Tombaugh, who is hunting for moonlets of Earth. He could detect a V-2 rocket at the distance of the Moon (240,000 miles) or a tennis ball at a distance of 1000 miles, provided only that both were painted white. This refers to photographic rather than visual detection, but it shows what can be done. It also shows that the un-instrumented artificial satellite would not have to be very large.

ONE suggestion made is to use an inelastic plastic balloon, white in color and radar-reflective and pack it into the nose of a rocket. The nose compartment would be in sections, held together by explosive bolts so that it can be made to fall part either by means of a timing device or by radio command from the ground.

The same timing device would open the valve of a tiny pressure cartridge inflating the balloon. Since the outside pressure is zero, the pressure required for inflating the balloon is very small; an ounce per square inch would be fully sufficient. Because of the lack of pressure from the outside, this balloon would keep its shape even if punctured by a meteorite, which is why I stated that it

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should be an inelastic balloon that is not stretched during inflation but is inflated merely to establish its shape.

Another suggestion for a very simple un-instrumented artificial satellite is to carry a pressure cartridge containing a plastic foam, similar to the aerosol shaving cream bombs. Here nothing is needed but a timing device operating the valve at the right time, after the rocket has settled in the orbit. The total weight of such an un-instrumented satellite would be ridiculously small, six or eight pounds, but the bubble would be large enough for easy observation with small instruments, for radar echoes and even for naked-eye visibility at dawn or dusk, when the observer is still (or already) in the shadow of Earth but the artificial satellite is still in sunlight.

Now let us see how difficult it would be to get it into space. The so-called circular velocity for Earth, the velocity with which a body must move to stay always at the same distance from the ground, is given by the square root of $g(r + h)$ where g means gravity, as usual, r means the radius of Earth and h refers to the distance above the ground. If h is zero, the value for the circular velocity is 4.943 miles per second. That is the speed a satellite would have if it were racing around Earth at ten feet above sea level.

Obviously this cannot be done because of air resistance. At a distance of 1000 miles, the necessary speed is 4.4 miles per second; a quarter of a million miles away, it is only 0.64 miles per second.

But these figures are deceptive in a certain way. True, the farther the satellite is from Earth, the smaller its orbital velocity, but that does not mean that it would be easier to establish a satellite at 10,000 miles than at 500 miles. It needs extra fuel to lift it to that distance, so the cheapest satellite, in terms of fuel expenditure, is the one closest to Earth that the presence of the atmosphere will permit.

LET us say, for the sake of round figures, that the artificial satellite will require an orbital velocity of 4.5 miles per second. The rocket must be capable of attaining this velocity, parallel to the ground. And in the process of attaining this velocity, it must climb out of the atmosphere against Earth's gravity and against atmospheric drag for part of the way.

If the rocket climbed on a near-vertical path all the way, it would, of course, traverse the atmosphere along the shortest route, but its "heading" would be wrong. The solution is the one which has

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been in use for a long time for long-range rockets: vertical takeoff and a vertical, or very nearly so, path for the first eight or ten miles. Then a gradual tilt in the proper direction, assuming shallower and shallower angles to the horizontal. For long-range rockets, the tilt is usually stopped when the angle is near 45°, since this results in the longest range for a given velocity. For establishing an artificial satellite, the angle would be still shallower.

Of course it cannot be a single rocket. If we wanted a single rocket to go into such an orbit, it would need so much fuel that it would have to have a mass-ratio of about 40:1, which means that its takeoff weight should be 40 times as high as the weight of what finally gets into space. Such a rocket obviously cannot be built. The answer is the step principle, a rocket carrying another rocket as its payload, and the payload of the second rocket being a third rocket. That way, you get rid of unnecessary dead weight just about as soon as it can be done.

Now the general rule for the velocity a rocket will attain is that the velocity of the rocket becomes equal to the exhaust velocity if the mass-ratio is equal to 2.72. This, however, does not include the fuel that is expended in fighting gravity and that required to overcome air resistance. An extra allowance has to be made for that.

If we assume that our fuel will produce an exhaust velocity of 1.5 miles per second — a little high for present-day fuels, but I am not advocating a special design, only to demonstrate the principle — such a mass-ratio of 2.72:1 would produce a rocket velocity of 1.5 miles per second. If we take the mass-ratio a bit higher, namely 3.5:1, the rocket velocity would be 5/4 of the exhaust velocity or 1.87 miles per second. Since the establishment of the artificial satellite needs 4.5 miles per second plus allowance for the climb and some air resistance, and since 3 times 1.87 is 5.61, the rocket needed for the job would be a three-stage rocket.

WE'LL run quickly through a rough weight calculation for the whole. If the payload weighs 8 pounds and the empty rocket of Stage III weighs 60 pounds, the third stage would need 170 pounds of fuel, so that its total weight would be 238 pounds. This is the "payload" for the second stage, which we'll assume to weigh 812 pounds empty. It would need 2625 pounds of fuel, so that the "payload" for the first stage would work out to 3675 pounds. If the empty rocket of the first stage weighs 6125

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pounds, the fuel for the first stage would be 24,500 pounds, so that the total takeoff weight for the whole three-stage job would be 34,300 pounds or about 15½ tons. That wouldn't be much bigger than the 12-ton V-2.

But a rocket engineer entrusted with the job of designing a three-stage rocket for an uninstrumented artificial satellite would not start from scratch in this manner. He would look around for existing rockets which could be fitted into a three-stage assembly with only minor modifications.

When the two-stage rockets of Project Bumper were designed, two existing and then available types were used: V-2s for the first stages and WAC Corporals for the second stages (even though everybody, including the designer, of course, knew that a specially developed second stage would produce much better results). For the satellite-carrying three-stager, the engineer might hope for three different available rockets which, in combination, would produce the required ultimate velocity. Naturally, it may happen that he has to settle for two and design a stage between them to do the job.

An interesting example of such thinking, with an additional idea thrown in, was a paper read at the Ninth Annual Meeting of the American Rocket Society in December, 1954. During the past few years, Dr. Van Allen had obtained very satisfactory results by launching the solid-fuel "Deacon" rockets from high-flying plastic balloons. Because the balloon carried the rocket to regions where air resistance has become almost negligible, the rockets operated under near-ideal conditions: they could move under high accelerations.

The two authors of the paper (K. Stehling of Bell Aircraft Co. and R. M. Missert of the University of Iowa) advocated the launching of the artificial satellite by means of a balloon-borne rocket. Their first stage was to consist of four solid-fuel booster units with a total weight of 12,000 pounds. The second stage was to be a 1300 pound liquid fuel rocket and the third stage a 200 pound liquid fuel rocket with a thrust of 2000 pounds and a payload (satellite) of 30 pounds.

All these figures sound "reasonable" in the sense that rockets of about these specifications are likely to exist. The solid-fuel boosters resemble a British type which has been discussed in aviation magazines, the second stage corresponds approximately to the Aerobee rocket and the third stage might be built around a liquid fuel booster.

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TO SUBSTITUTE a fast jet plane for the balloon would have a number of advantages. The jet plane probably could not carry the rocket to quite the height reached by a plastic balloon, but it could go high enough so that more than half of the total mass of the atmosphere would be below the rocket.

To make up for the comparative lack of height, the jet plane would provide an initial velocity of ¼ mile per second. If it flew in an easterly direction near the equator, Earth's rotation would have added another ¼ mile per second before the plane even took off. This would leave slightly more than 4 miles per second to be added by the rocket assembly, which might be done even by a two-stage rocket, especially since the plane would provide direction and elevation (by pulling out of a shallow dive) so that the guidance equipment of the rocket could be kept to a minimum. All it would have to do is to go where aimed.

Again, somebody toying with this possibility would have to look around for two suitable rockets plus a suitable jet plane. But whether air-launched or ground-launched, the combination of rockets required to throw a small uninstrumented satellite into an orbit should be achievable in the near future.

ANY QUESTIONS?

Just what is the internal constitution of Jupiter? In the book "Earth, Moon and Planets" by Fred L. Whipple, Jupiter is shown as consisting of a metallic core overlaid by a thick shell of ice and a deep hydrogen atmosphere. The diameter of the metallic core is shown to be about half the total diameter. In a more recent book by George Gamow, the same scheme is followed, but the metallic core is at best 10 per cent of the total diameter. Which one is right?

Charles B. Hoffmeister
Montclair, New Jersey

To answer the last sentence first: I don't know which is right and if anybody else does, he has kept quiet so far. Naturally we don't know the internal constitution of Jupiter; these are various "educated guesses" to make the mass come out right for the observed dimensions and to account, simultaneously, for the measured temperatures.

In a still more recent book, Robert S. Richardson's *Exploring Mars*, you can find a cross section of Jupiter according to the ideas of W. H. Ramsay of Manchester University, England. Professor Ramsay's fundamental proposition is that Jupiter consists mostly of hy-

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drogen, all other elements being present in such small amounts (comparatively speaking) that they can be regarded as mere impurities of the hydrogen. In this concept, the surface of the planet consists of cold gases in violent motion, which is what we see in the telescope.

The pressure below this surface builds up rapidly and at a depth of, say, 500 miles, the planet's crust would consist mostly of solid hydrogen. At a depth of 2000 miles, the solid hydrogen is calculated to be under a pressure of 200,000 atmospheres. At a depth of 5000 miles, the pressure would approach 800,000 atmospheres.

The solid hydrogen would have a density of 0.3 of that of water at 2000 miles and of 0.4 at 5000 miles. At a pressure of 800,000 atmospheres, solid hydrogen changes to metallic hydrogen, which is far more compressible than solid hydrogen.

Ramsay's picture of Jupiter then consists of a solid hydrogen shell 5500 miles thick covering a sphere of metallic hydrogen 75,800 miles in diameter. The density of the solid hydrogen is supposed to lie between 0.3 and 0.4; the density of the metallic hydrogen is calculated as being 0.9 near the surface of the metallic hydrogen sphere and 3.7 at its center.

This, too, makes the overall density come out correctly, but whether this picture corresponds to reality is something that only future research can tell.

What is the escape velocity for each planet of the Solar System and how is it found?

Earl Dawney
Route No. 2
Gadsden, Alabama

The escape velocities of the various planets, expressed in miles per second and rounded off to the nearest 1/10th of a mile, are as follows:

Mercury	2.2
Venus	6.3
Earth	7.0
Mars	3.1
Jupiter	37.0
Saturn	22.0
Uranus	13.0
Neptune	14.0
Pluto	6.0??
Moon	1.5

In order to find the escape velocity for any planet, it is necessary to know its surface gravity. The escape velocity corresponds to the impact velocity of a body which fell to the planet from infinity; this happens to be equal to a fall through a field of constant sur-

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face gravity for the distance of one planet radius. The formula is the square root of 2 g multiplied by the planet radius; the "g" refers to the surface gravity of the planet.

I wish to take exception to your statement in GALAXY *for February, 1955, page 82, where you say "1* A.D. *immediately followed after 1* B.C., *though logically one should expect a year zero (namely the year of the birth of Christ) between them." Most scholars are now agreed that Christ was born in 6* B.C.

"Student"
University of Chicago
Chicago, Ill.

Normally I do not answer anonymous letters — names are withheld on request — but I'll make an exception in this case since a personal acquaintance brought up the very same question. Of course I know that historians think that Christ was born several years earlier than first believed — the dates mentioned are 4 B.C., 6 B.C., and 8 B.C. But when I wrote this reply, that problem was not under discussion; no matter what the actual year of the birth of Christ happened to be, my point remains: logically, the year of the birth of Christ should be zero between 1 Before Christ and 1 Anno Domini.

—WILLY LEY

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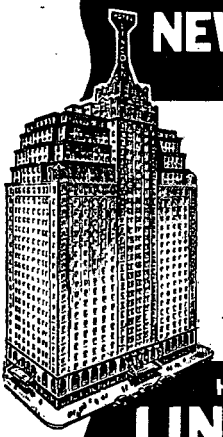

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DEADHEAD

By ROBERT SHECKLEY

All deadheads naturally came to Mars without tickets — but this one was just the ticket!

I DROVE down to Marsport a few hours after the Earth ship landed. There were diamond-tip drills on board, which I had had on requisition for over a year. I wanted to claim them before someone took them. That's not to imply that anyone would *steal* anything; we're all gentlemen and scientists here on Mars. But things are hard to get, and theft-by-priority is the way a gentleman-scientist steals what he needs.

I loaded my drills into the jeep just as Carson from Mining drove up waving a Most Urgent Top Crash Priority. Luckily, I had had the good sense to secure a topmost priority from Director Burke. Carson was so pleasant about it that I gave him three drills.

He chugged away on his scooter, over the red sands of Mars that look so good in color photography, but gum up engines so completely.

I walked over to the Earth ship, not because I give a damn about spaceships, but just to look at something different.

Then I saw the deadhead.

He was standing near the spaceship, his eyes as big as saucers, looking at the red sand,

Illustrated by DICK FRANCIS

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the scorched landing pits, the five buildings of Marsport. The expression on his face said, "Mars! Gee!"

I groaned inwardly. I had more work that day than I could accomplish in a month. But the deadhead was my problem. Director Burke, in a moment of unusual whimsy, had said to me, "Tully, you have a way with people. You understand them. They like you. Therefore I am appointing you Mars Security Chief."

Which meant I was in charge of deadheads.

THIS particular one was about twenty years old. He was over six feet tall, with perhaps a hundred some very odd pounds of ill-nourished meat on his bones. His nose was turning a bright red in our healthy Martian climate. He had big, clumsy-looking hands, big feet, and he was gasping like a fish out of water in our healthy Martian atmosphere. Naturally, he didn't have a respirator. Deadheads never do.

I walked up to him and said, "Well, how do you like it here?"

"Gol-*lee*!" he said.

"Quite a feeling, isn't it?" I asked him. "Actually standing on a real honest-to-John alien planet."

"I'll say it is!" the deadhead gasped. He was turning a faint blue from oxygen starvation, all except the tip of his nose. I decided to let him suffer a little longer.

"So you stowed away on that freighter," I said. "You rode deadhead to wonderful, enchanting, exotic Mars."

"Well, I don't think you could call me a stowaway," he said, fighting for breath. "I sorta — sorta —"

"Sorta bribed the captain," I finished for him. By this time, he was weaving unsteadily on his long, skinny legs. I pulled out my spare respirator and clapped it over his nose.

"Come on, deadhead," I said. "I'll get you something to eat. Then you and I are going to have a serious talk."

I held his arm on the way to the mess hall, because he was goggling so hard he would have fallen over something and broken it. Inside, I boosted the atmosphere and warmed some pork and beans for him.

He wolfed them down, leaned back in the chair and grinned ear from ear. "My name's Johnny Franklin," he said. "Mars! I can't believe I'm really here."

That's what all the deadheads say, those who survive the trip. There are about ten attempts a year, but only one or two make

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it alive. They're such idiots, most of them. A deadhead manages to sneak on board a freighter, in spite of all the security checks.

The ship takes off at about twenty Gs and, without special protection, the deadhead is crushed flat. If he survives that, radiation gets him. Or he's asphyxiated in the airless hold, before he can reach the pilot's compartment.

We've got a special graveyard here, just for deadheads.

But a few of them pull through, and they walk onto Mars with big hopes and stars in their eyes.

I'm the guy who has to disillusion them.

"JUST what did you come to Mars for?" I asked.

"I'll tell you," Franklin said. "On Earth you gotta do just like everybody else does. You gotta think like everybody else and act like everybody else or they lock you up."

I nodded. Earth was stable now, for the first time in the history of mankind. World peace, world government, world prosperity. The authorities wanted to keep it that way. I think they go too far in the suppression of even harmless individualism, but who am I to say? Things will probably relax in a hundred years or so, but that's not good enough for a deadhead living *now*.

"So you felt the need of new horizons," I said.

"Yes, sir," Franklin said. "I hope this doesn't sound too corny to you, sir, but I want to be a pioneer. I don't care how hard it is. I'll work! You'll see, just let me stay, please, sir! I'll work so hard —"

"Doing what?" I asked.

"Huh?" He looked startled for a moment. Then he said, "I'll do anything."

"But what can you do? We could use a good inorganic chemist, of course. Do your skills happen to run along that line?"

"No, sir," the deadhead said.

I didn't enjoy doing this, but it was important to impress the grim and unpalatable truth upon deadheads. "So your field isn't chemistry," I mused. "Might have a spot for a top-notch geologist. Or possibly a statistician."

"I'm afraid —"

"Tell me, Franklin, have you got your Ph.d.?"

"No, sir."

"Doctorate? Masters? Have you even got a B.S.?"

"No, sir," Franklin said miserably. "I never even finished high school."

"Then just what do you think you can do here?" I asked.

"Well, sir," Franklin said. "I read where the Project is scat-

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tered all over Mars. I thought I could be maybe a messenger, sorta. And I can also do carpentry, and some plumbing and — there must be something I can do here."

I poured Franklin another cup of coffee and he looked at me, his big eyes pleading. The deadheads always look like that when we reach this point. They think that Mars is like Alaska in the '70s, or Antartica in 2000; a frontier for brave, determined men. But Mars isn't a frontier. It's a dead end.

"Franklin," I said, "did you know that Mars Project is not self-supporting, and may never be? Did you know that it costs the project about fifty thousand dollars a year to maintain a man here? Do you figure you're worth a salary of fifty thousand a year?"

"I won't eat much," Franklin said. "And once I get the hang of things I'll —"

"*And*," I broke in, "were you also aware that there isn't a man on Mars who doesn't hold at least the title of Doctor?"

"I didn't know that," Franklin whispered.

DEADHEADS never do. I have to tell them. So I told Franklin that scientists do the plumbing, carpentry, messenger work, the cooking, cleaning and repairing, all in their spare time. Not well, perhaps, but it gets done.

The fact is: There is no unskilled labor on Mars. We just can't afford it.

I thought he'd burst into tears, but he managed to control himself.

He stared wistfully around the room, looking at everything in our crummy little mess hall. You see, it was all Martian.

"Come on," I said, standing up. "I'll find a bed for you. Tomorrow we'll arrange your passage back to Earth. Don't feel so bad. At least you've seen Mars."

"Yes, sir." The deadhead stood up wearily. "But, sir, I am not going back to Earth."

I didn't argue with him. A lot of deadheads talk big. How was I to know what this one had in his mind?

After settling Franklin, I returned to my lab and did a few hours work that absolutely had to be done. Then I fell into bed exhausted.

The next morning, I went to wake Franklin. He wasn't in his bed. Immediately I thought of the possibility of sabotage. Who knows what a thwarted pioneer will do? Pull some rods out of the pile, perhaps, or set off the fuel dump. I scurried around the camp looking frantically, and fin-

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ally found him at the half-built spec lab.

The spec lab was necessarily a spare-time project with us. Whenever anyone had an extra half hour, he mortared a few bricks, sawed out a table-top, or screwed hinges on a door. No one could be spared from his work long enough to really put the thing together.

Franklin had accomplished more in a few hours than most of us had in a few months. He was a good carpenter, all right, and he worked as though all the furies of hell were pursuing him.

"Franklin!" I shouted.

"Yes, *sir*." He hurried over to me. "Just wanted to do something for my keep, Mr. Tully. Give me a few more hours and I'll have a roof on her. And if no one's using those pipe lengths over there, I could maybe finish the plumbing by tomorrow."

Franklin was a good man, all right. He was just the sort Mars needed. By all the rules of human decency and justice I should have patted him on the shoulder and said, "Boy, book-learning isn't everything. You can stay. We need you."

I REALLY wanted to say just that. But I couldn't. There are no success stories on Mars. No deadhead makes good. We scientists *can* manage the carpentry and plumbing, poor though the results may be. And we just can't afford duplication of skills.

"Will you please stop making this hard for me, Franklin? I'm a soft-hearted slob. You've convinced me. But all I can do is enforce the rules. You must go back."

"I can't go back." Franklin said very softly.

"Huh?"

"They'll lock me up if I go back," Franklin said.

"All right, tell me about it," I groaned. "But please make it quick."

"Yes, sir. Like I told you," Franklin said. "On Earth, you gotta do like everybody else, and think like everybody else. Well, that was fine for a while. But then I discovered The Truth."

"You what?"

"I discovered The Truth," Franklin said proudly. "I found it by accident, but it was really very simple. It was so simple, I taught it to my sister, and if she could learn it, anyone could. Then I tried to teach it to everybody."

"Go on," I said.

"Well, everybody got very angry. They told me I was crazy, I should shut up. But I couldn't shut up, Mr. Tully, because it was The Truth. So when they

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went to lock me up, I came to Mars."

Oh, great, I thought. Franklin was just what we needed on Mars. A good, old-fashioned religious fanatic to preach to us hardened scientists. And he was just what the doctor ordered for me. Now, after sending him back to Earth — to prison — I could suffer guilt feelings the rest of my life.

"And that isn't all," Franklin said.

"You mean there's more to this pathetic tale?"

"Yes, sir."

"Go on," I said with a sigh.

"They're after my sister, too," Franklin said. "You see, after she saw The Truth, she was as eager to teach it as me. It's The Truth, you know. So now she has to hide, until — until —" He wiped his nose and gulped miserably. "I thought I could show you how good I'd be on Mars, and then my sister could join me and —"

"Stop!" I said.

"Yes, sir."

"I don't want to hear any more," I told him. "I've already listened to you too much."

"Would you like me to tell you The Truth?" Franklin asked eagerly. "I could explain —"

"Not another word." I barked.

"Yes, sir."

"Franklin, there is nothing, absolutely nothing I can do for you. You haven't got the qualifications. I haven't the authority to allow you to stay. But I will do the only thing I can do. I'll speak to the Director about you."

"Gee! Thanks a lot, Mr. Tully. Would you explain to him that I haven't really recovered from that trip yet? Once I get my strength back, I'll show you —"

"Sure, sure," I said, and hurried off.

THE Director stared at me as though I had slipped my regulator. "But Tully," he said, "*you* know the rules."

"Sure," I said. "But he really would be useful. And I hate to ship him back to the police."

"It costs fifty thousand dollars a year to maintain a man on Mars," the Director said. "Do you think he's worth a salary of —"

"I know, I know," I said. "But he's such a pathetic case, and he's so eager, and we could use —"

"All deadheads are pathetic," the Director said.

"Yeah. After all, they're inferior human beings, not like us scientists. So back he goes."

"Ed," the Director spoke quietly. "I can see resentment building between us over this. Therefore I'm going to leave it up to you. You know that there are close to ten thousand applications

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a year for a berth in Mars Project. We turn back better men than ourselves. Kids in the universities study for years to fill a specific place here, and then find the position already taken. Considering all that, do you honestly feel that Franklin should stay?"

"I — I — oh, damnit, no, if you put it that way." I was still angry.

"Is there any other way to put it?" the Director asked.

"Of course not."

"It's a sad situation when many are called but few are chosen," the Director mused. "There's a need for a new frontier. I'd like to open Mars wide open for colonization. And someday we will. But not until we're self-supporting."

"Right," I said. "I'll arrange for the deadhead's return."

FRANKLIN was working on the roof of the spec lab when I returned, and he had only to look at my face to know what the answer was.

I climbed in my jeep and drove to Marsport. I had quite a few harsh words to say to the captain of the space freighter who had allowed Franklin on board. Too much of that stuff goes on. This joker was going to carry Franklin back to Earth.

The freighter was in the blast pit, its nose pointing skyward. Clarkson, our atomics man, was readying it for takeoff.

"Where's the captain of this heap?" I asked.

"No captain," Clarkson said. "This is a drone model. Radio-controlled."

My stomach started to do slow flip-flops. "No captain?"

"Nope."

"Any crew?"

"Not on a drone," Clarkson said. "You know that, Tully."

"In that case," I said brightly, "there's no oxygen on board."

"Of course not!"

"And no radiation shielding."

"That's right." Clarkson stared at me.

"And no insulation."

"Just enough to keep the hull from melting."

"I suppose it took off at top acceleration. Thirty-five or so Gs."

"Sure," Clarkson said. "That's the economical way, if you haven't got humans on board. What's eating you?"

I didn't answer him. I just walked to the jeep and roared back to the spec lab. My stomach was no longer doing flip-flops. It was spinning like a top.

A human couldn't have lived through that trip. Not a chance. Not a chance in ten billion. It was a physical impossibility.

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WHEN I reached the lab, Franklin had completed the roof and was on the ground, connecting pipes. It was lunchtime, and several of the men from Mining were helping him.

"Franklin," I said.

"Yes, sir?"

I took a deep breath. "Franklin, did you come here on that freighter?"

"No, sir," he said. "I tried to tell you that I didn't bribe no captain, but you wouldn't —"

"In that case," I spoke very slowly, "how did you get here?"

"By using The Truth!"

"Could you show me?"

Franklin considered for a moment. "The trip tired me out something awful, Mr. Tully," he said, "but I guess I could."

And he disappeared.

I stood there, blinking. Then one of the Mining men pointed overhead. There was Franklin, hovering at about three hundred feet.

In another moment, he was standing beside me again, his nose pinched and red from the cold.

It looked like instantaneous transfer. Oh, brother.

"Is that The Truth?" I asked.

"Yes, sir," Franklin said. "It's a different way of looking at things. Once you see it — *really* see it — you can do all sorts of things. But they called it a — a hallucination on Earth, and they said I had to stop hypnotizing people and —"

"You can teach this?" I asked.

"Sure," Franklin said. "It may take a little time, though."

"That's all right. I guess we can afford a little time. Yessiree, I guess we sure can. Yessiree, a little time spent on The Truth might be well spent —"

I don't know how much longer I would have gone on babbling, but Franklin broke in eagerly.

"Mr. Tully, does that mean I can stay?"

"You can stay, Franklin. As a matter of fact, if you try to leave, I'll shoot you."

"Oh, thank you, sir! And how about my sister? Can she come?"

"Oh, yes, most certainly," I said. "Your sister can come. Any time she —"

I heard a startled shriek from the Mining men. The hairs on the back of my neck stood on end, and I turned very slowly.

There stood a girl, a tall, skinny girl with eyes as big as saucers. She stared around like a sleepwalker and murmured, "Mars! Gol-*lee!*"

Then she turned to me and blushed.

"I'm sorry, sir," she said. "I — I was listening in."

—ROBERT SHECKLEY

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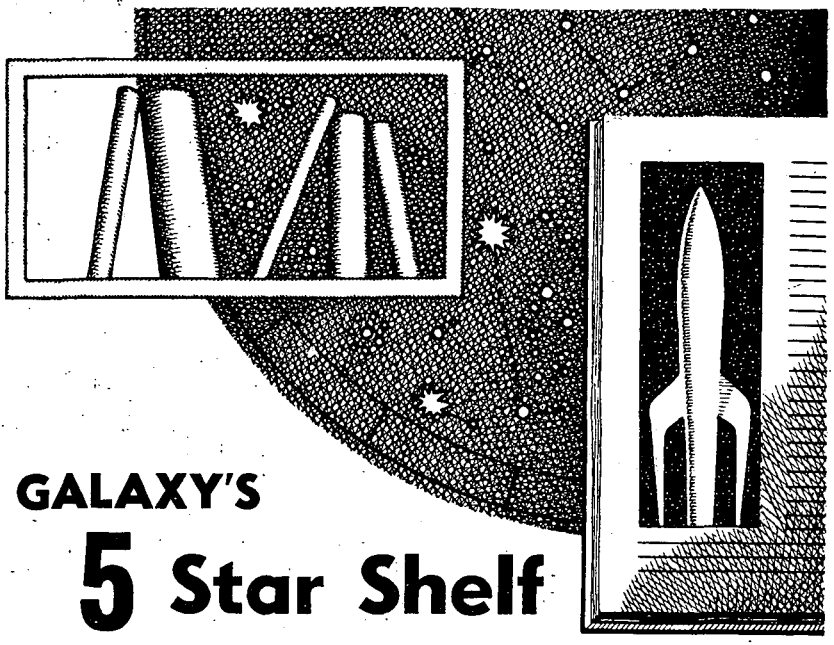

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Don't miss it!

THE OTHER SIDE OF HERE by Murray Leinster; ONE AGAINST ETERNITY (The Weapon Makers) by A. E. van Vogt. Ace Books, 35c

AGAIN we have a winning combination from Ace at the usual bargain price. The van Vogt is as magnificent a piece of superscience whoopdedoo as it was when it first appeared in *Astounding* in 1943. As I said in my review of the hardbound edition in the July 1952 GALAXY, it is genuinely "star stuff."

The new and never before published Leinster is completely up

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to his usual standard: a vivid, galloping melodrama based on his favorite theme of alternate worlds. In this one, tyrants from the "other" world penetrate ours and, by means of a typically Leinsterian electronic gadget, they almost paralyze (literally) the whole of the U.S.A. A first-rate example of the you-can't-put-it-down school.

THE VISIONARY NOVELS OF GEORGE MACDONALD: LILITH and PHANTASTES. Edited by Anne Fremantle. Noonday Press, $5.00

IMAGINATIVE classics, so-called, are only too often disappointing in their leadenness of style and their dated outlook. This cannot be said of either of these quite remarkably contemporary theological fantasies, which were published in the Nineteenth Century.

Lilith in particular is a fascinating item for a science fiction audience; along with its symbolism and its moral allegorizing comes an astonishing amount of "machinery" which antedates many of our most cherished science-fictional techniques by over half a century.

The *modus operandi* of this story is based on (Murray Leinster, hold your breath!) the concept of a parallel world, into which one can enter through "glowing portals" or — believe it or not — *correctly polarized mirrors!*

For an 1890 parson who, in addition, was a good friend of Lewis Carroll (who never used any polarization to get Alice through *her* looking glass!), the science fiction "realism" is almost incredible.

Furthermore, the book is written with excellent taste and clarity of style. The reader will, I suppose, be as bewildered as I by some of the author's short-hand metaphysics, the cryptic nature of some of his events — but even so, this combination of *Pilgrim's Progress* (a great fairy tale!), *Alice in Wonderland,* and the work of C. S. Lewis (*Perelandria,* etc.), is a fascinating piece of work. Lewis, incidentally, has stated that MacDonald had a decisive influence on his own writing.

Phantastes is almost as good, though, being much earlier in composition, it does not have quite the maturity of vision and sureness of hand that *Lilith* has. It is also nowhere near as astonishing a prevision of modern science fiction as is the later book.

But neither is of merely antiquarian interest. They really hold your attention. MacDonald is a genuine discovery and very definitely worth your time.

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THE MAKER OF MOONS by Robert W. Chambers. Shroud Publishers, $1.00

THIS seems to be a month for antiques. The present novelet was written by the author of *The King in Yellow* (which I have always found offensively dull) back in 1895. This one is NOT dull! As a fantasy mood piece it's excellent, though as science fiction it's silly.

The tale tells of a Chinese gold-making sorcerer transplanted to an estate in, say, rural New York, where gentlemen farmer hunting is a way of life. The Oriental fakir tries to undermine our economy with fairy gold. The story is told with such verisimilitude that, even though you know all along that it is as phony as a 7-cent piece, it really grabs you up and carries you along.

THE BODY SNATCHERS by Jack Finney. Dell Books, 25c

THERE is absolutely nothing wrong with this novel, which was first serialized in *Collier's,* except that it has been done again and again and again. Too many s-f novels lack outstanding originality, but this one lacks it to an outstanding degree.

Of course it is competently written (Finney is always an authentic stylist) and swiftly paced. The plot revolves around a small town in California where people seem to be being "taken over" by some sort of — well, thing. It reminds me a bit of Heinlein's *Puppet Masters,* though without any of his oomph. But it's worth 25c.

A MAN OBSESSED by Alan E. Nourse; THE LAST PLANET (Star Rangers) by Andre Norton. Ace Books, 25c

NOURSE'S original novel, although overwritten, overlong for the material, and a bit aimless in plot, is still worth your attention, if only for the mood of terror it evokes. Dr. Nourse, expert in the ways of psychiatry, has turned out a thriller of a mad world in which the madness is based on the damage that can be done by men possessed of extrasensory perception gene-linked with insanity. At moments, the book can really pull you through knotholes.

The Norton tale, originally published as a juvenile, is still good, simple, uncomplicated science fiction.

FEW WERE LEFT by Harold Rein. John Day, $3.50

MOST first novels show their authors' inexperience and this is no exception. The whole

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story takes place in one of New York's subways, in which a handful of survivors of some holocaust (probably atomic) struggle in separate groups down the pitch-black underground and finally, when all are together, defeat an attempt by a ten-cent tyrant to run their lives for them.

It's a graphic job of description and some of the characters are eloquently presented; but the doomful earnestness gets so badly in the way that you are likely to end up being bored.

TYRANT OF TIME by Lloyd Arthur Eshbach. Fantasy Press, $3.00

I regret to report that this collection of nine novelets and short stories by old-timer Eshbach is another of those stones that should have been left unturned. The ideas no longer have any originality and the style is an almost perfect example of the early days of science fiction.

I would have been happy if I could have made a better report about the work of a man who has done so much, in other ways, for the field. I'm truly sorry I can't.

UNDERSEA QUEST by Frederik Pohl and Jack Williamson. Gnome Press, $2.50

THE story, which deals with undersea uranium mining, is well plotted, well written, full of exciting incidents and rich imagination — all one would ask of a satisfying juvenile. And yet I'm unhappy with it. Why? And do I have the right to impose adult moral standards on a book for youngsters?

As a grownup who likes the feel of freedom, I detest the petrifying process that military academies put children through. It produces stiff spines, sure, but equally rigid minds. This book has that kind of us-against-the-world attitude.

On the other hand, kids view everything in black and white, yay for our side, etc. Which leaves me unhappily aware that primitivism is a necessary precondition to civilization.

End of sermon.

—GROFF CONKLIN

★ ★ ★ ★ ★

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The Amateurs

By ALAN COGAN

Illustrated by DIEHL

The ultimate show demanded the ultimate in showmanship — now if only Mr. Sims could measure up!

TO MR. SIMS, it seemed as though they had walked along a hundred corridors, and as he followed Mr. Hoode, he felt as though he were taking the last walk to the gallows or the electric chair. When the director finally led him outside, Mr. Sims realized with a slight twinge of fear that he hadn't really expected to see daylight again.

They were in the rich, rolling parkland at the rear of the palace and walking across the immaculate turf where colored fountains frolicked and shimmered in the sun. Lilting music floated out from a dozen hidden sources. The two men sat down on a seat facing the palace with its towering columns and vast marble steps.

"It's a very nice place," Mr. Sims commented, remembering that he hadn't said a word for at least five minutes.

"I suppose it's all right," Arthur Hoode agreed, his thin nostrils twitching condescendingly. He was a small, sleek man with a habit of emphasizing his words with airy gestures of his slim hands. "That section of the palace is the part I consider most uninteresting. After all, there's nothing but row upon row of stuffy little rooms where people come

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to die. And they take a long time doing it, too!"

Mr. Sims winced noticeably.

"You'll forgive me if I don't appear overly sanctimonious about death," Mr. Hoode said, smiling. "It's just that the other directors and myself decided we must take a realistic view of the situation. A place like this could become pretty morbid, you know, and there's actually no reason why a guest's last hours here shouldn't be pleasant and satisfying."

PLEASANT and satisfying — the key words when you spoke of Sunnylands Palace, Mr. Sims thought grimly. Everyone used them — when not going there.

The words gave him a hollow, frightened feeling inside, perhaps because they made him remember the first time he had heard them used.

"It's a pleasant place and quite satisfying," Dr. Van Stoke had said. "There's no need to think of it as some kind of torture camp."

"But why should I go there at all?" Mr. Sims had asked. "I don't want to die. I'm only fifty-six and I've got nine more years left."

"Try and understand I'm doing you a good turn," the doctor had said. "You've lived fifty-six *good* years; in your condition, the last nine won't be so good. You'll have pains, attacks, you won't be able to do anything strenuous. You'll hate to live under those conditions."

"I could always give it a try," Mr. Sims had protested.

Dr. Van Stoke had frowned bleakly over the tops of his glasses. "I know I'm a friend and family doctor," the frown had said, "but I'm also District Referee under the Euthanasian Legislation and you are becoming a burden to society. So don't make my job any more difficult."

He had signed his name at the bottom of the form.

And Mr. Sims had had a hollow, anxious feeling ever since.

"There's one thing I haven't found out yet," he said to Mr. Hoode. "Is it in order for me to ask how and when I can expect to die?"

"Certainly," Mr. Hoode said. "It's the reason I brought you here to talk. You see, anyone sent here under the Legislation is given a completely free choice as to the manner of his departure. Most people, although they realize this, show a distressing lack of imagination when the time comes. They seem unable to think beyond the ordinary methods of taking a pill, or a needle, or a poisoned cocktail."

"I can't say I'd thought about it, either," Mr. Sims admitted.

"We have a service to assist

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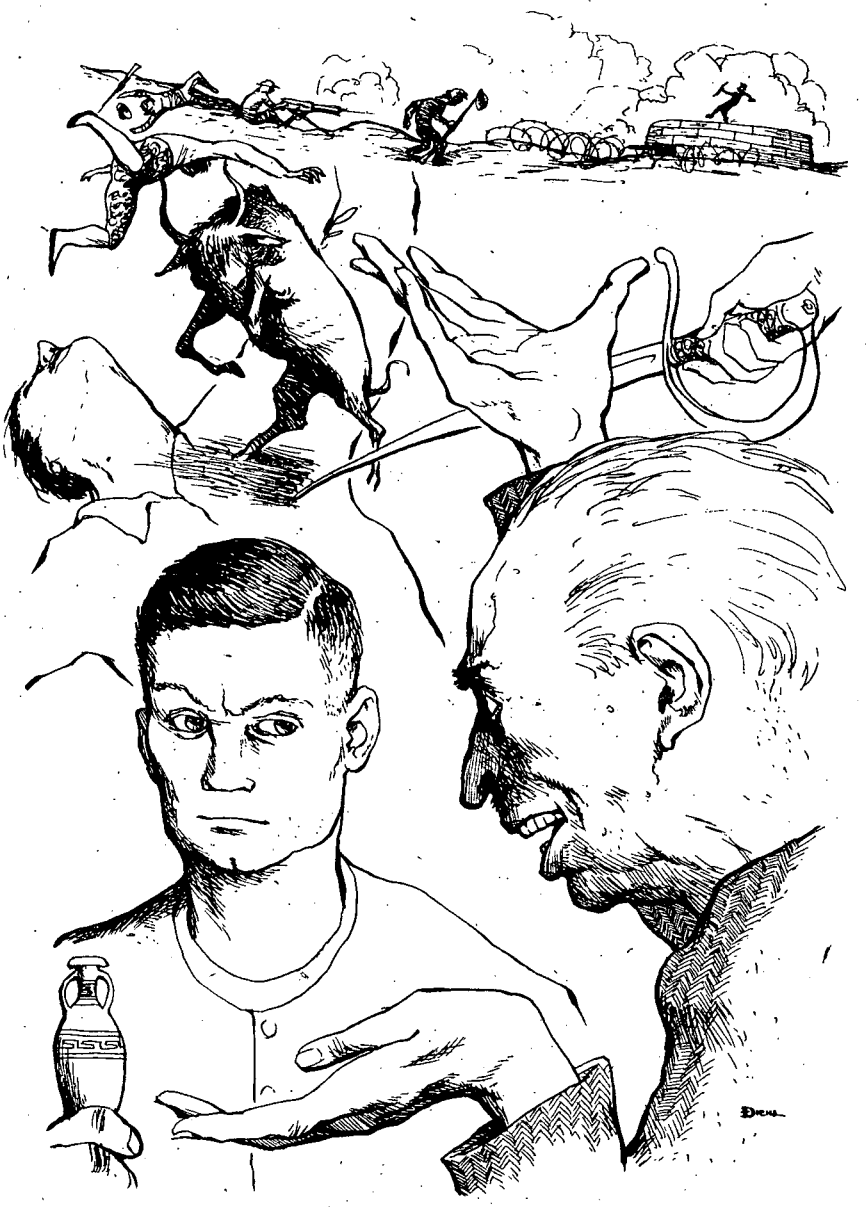

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you," said the director. "We of the Sunnylands staff have discovered what you might call a Philosophy of Dying. For instance, if a man lives an active life, there's no reason why he should be subjected to a sneaking prick of a needle in his sleep just because he reaches the age of sixty-five. We discovered that a few people objected strongly to such methods. There are some people who would prefer to die fighting. We had a couple who chose the firing squad, for instance. Another desired the guillotine and nothing would satisfy him but a ride to his fate in a real tumbril. Because of these — ah — pioneers, our advisory bureau has been set up."

"You mean you obliged them . . . with a guillotine and everything?" Mr. Sims asked.

"Certainly, though most choose the sneaking, cowardly way out. As far as I am concerned, they died as they lived — ignominously! It's depressing. We have the best accommodation, food, entertainment, everything the guest requires during his three days here; then they go ahead and die their miserable deaths. Somehow it makes all the luxury seem like pink sugar frosting around a rotten cake. That's why we're always happy to find a guest with the proper spirit." Mr. Hoode said.

MR. SIMS listened in silence to the sales talk, wondering absent-mindedly what the director's personal interest was in other people's death.

"I took the liberty of looking up your record," Mr. Hoode continued. "I picked you out for a personal talk because I see you led an interesting life." He paused in recollection with a theatrically thoughtful finger pressed to his chin, his eyes gazing skyward. "You made a small fortune in oil in Central America before you were twenty. That was followed by more success in hemelium mining in Northern Canada. An excellent Third World War record, too. Founder of Transcontinental Rocket Lines. Co-builder of the Venus rocket. Oh, and a dozen other things. Quite a career!"

Mr. Sims brightened a little. He smiled modestly.

"Too bad you had to come here at fifty-six," Mr. Hoode remarked. "Heaven knows what you might have done with those last nine years. Heart trouble, wasn't it?"

"So I've been told," Mr. Sims said, slipping back into his former glum mood. He still did not believe he was a sick man, but perhaps this was because things had moved too fast and he had not been given enough time to get used to the idea.

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"It's a serious cardiac condition," Dr. Van Stoke had told him at the annual examination, "due to an over-active life. I'll have to recommend you for Sunnylands."

And that had been the first mention of the subject.

"But I never had heart trouble in my life!"

"The graphs show the condition clearly. There's nothing anyone can do to remedy it. I'll have to submit your name."

He had protested — threatened — pleaded.

"Overpopulation! Elimination of needless suffering! Burden to society! Duty to humanity!" The cliches had tripped glibly off the doctor's tongue as he signed the form. "Will you please send in a member of the family? I'll give him the final instructions. Save you the trouble of worrying over little details during the final weeks."

Since then, things had moved more swiftly behind the scenes and he had had to do nothing except prepare himself — or adopt a realistic attitude, as Mr. Hoode would have described it. But he had lived too much to allow him to get used to the idea of dying in two short weeks. He hadn't even started to get realistic about it, which was probably why he could sit talking so calmly about death at that moment.

"WE COULD give your life a climax," the director was saying. "A man like you shouldn't just fade away in one of those little cubicles." He waved a hand in the direction of the shaded windows at the rear of the palace. "You should die magnificently!"

"Magnificently?" Mr. Sims repeated. "What did you have in mind?"

"It's what *you* have in mind that counts. I can offer you a lot of advice, but the final choice is yours. For instance, a large number of men like to die in some sort of combat, with guns or swords, or even with animals. We had one man who fought a tiger. Another fulfilled a life-long ambition to play the role of bullfighter. Perhaps I should explain that the government allows each guest a generous sum of money to pay for his departure. As most people do not use one hundredth of this sum, we have a rather large fund at the disposal of those who want to use it.

"The bullfighter was a good example," he went on. "We had a large ring built for him. He was given horses, uniforms, picadores, and a bull specially imported from Spain. It was a wonderful afternoon." He paused in contemplation of the memory, while Mr. Sims looked on, tactfully refraining from asking the outcome.

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"Another time, we had a group of old soldiers who wanted to die in battle," Mr. Hoode added. "We built them an old-fashioned concrete blockhouse, then gave them authentic uniforms, machine-guns, grenades and rifles, and had one group attacking and the other defending."

"Did they actually volunteer for that?" Mr. Sims asked.

"Of course, and I'll swear they enjoyed every minute of it. Right down to the last man. As a matter of fact, we're planning the same thing on a larger scale with a reenactment of Custer's Last Stand to be held in 2013. One of the men in Research is working full time on that project. So far, we have a tentative list of 138 names. It'll be held in the park over there." He waved gaily in the direction of the quiet meadow which would one day become another Little Big Horn.

Mr. Sims moved along the seat slightly, as though his companion had started to smell. It was as if, for the first time, he had noticed the glazed, visionary look in Mr. Hoode's eye. The director, he realized, would be capable of reenacting Hiroshima if given the required number of volunteers.

"I'll have to leave you, I'm afraid," said Mr. Hoode, standing up. "But if you'd like to think the matter over some more, I can offer you a fine selection of books to read about famous deaths, duels, acts of heroism and such throughout history."

"It's an interesting notion," Mr. Sims said. "I'll think about it."

MR. SIMS tried to avoid the director all that day and all the following morning. He tried hard to convince himself that this was because he disliked the other's bloodthirsty tendencies, although he knew the truth was that his choice of departure was a cowardly one. Nevertheless, he argued with himself, it was his choice, his death, and his mind was made up. Besides, he felt lonely and this might be an opportunity to see the family again, even though they probably wouldn't like it.

It was the director who finally located Mr. Sims. "Are you enjoying your stay here?" he asked heartily. Mr. Sims winced as though the cold hand of death itself had slapped him on the back.

"Have you come to any decision yet?"

Mr. Sims nodded. "Yes, I looked at the book last night and decided on Socrates. Just a simple cup of hemlock."

A slight frown shadowed the director's features. Was it contempt, Mr. Sims wondered, or disappointment because he had failed in his attempts to make

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poisoning seem a socially inferior way of dying? Nothing glamorous about such a departure, he realized. No disdainful refusal of the blindfold when gazing bravely into the leveled muzzles of the firing squad. No bullfight, armed combat, duel or ferocious carnivores.

The director shrugged. "Well, it's tranquil and dignified, I suppose," he conceded finally. Then the practical streak in his nature came to the forefront and his mind ran quickly over the possibilities. "If I remember correctly, Socrates died in the company of a number of good friends. They discussed philosophy."

"I'll have my family instead. I've no idea what we'll talk about. Their names are on this list."

"It's irregular —"

"Nevertheless, I want them here."

"All right," said Mr. Hoode, disappointed. "I'll send for them today. I'll also see the lab about some hemlock and something authentic to hold it in — an amphora or whatever the Greeks used. By the way, I'm not too well acquainted with Socrates. Are there any unusual details?"

"If there are, forget them," Mr. Sims said. "The family and the hemlock will be sufficient."

Mr. Hoode sniffed peevishly. "As you wish. Be ready tomorrow."

THE rough woven garment was a concession to Mr. Hoode, who said it was Grecian, and Mr. Sims wore it to make up for any annoyance he may have caused the director. It was rather itchy and much too warm, he thought, as he waited by the fountain at the far end of the park. The hemlock was in a bronze goblet on the parapet beside him. The family would be here soon. He wondered how they would feel about being dragged way out here.

They arrived a half hour later: Cousin Nat, his two nephews, George and Alec, their wives, and George's five-year-old, Mike. Mr. Hoode was also with them, but he left the party as soon as he had shown them where Mr. Sims was waiting.

The meeting was restrained. Clearly they were not happy about making the trip. There were no smiles of greeting; only young Mike showed any distinct interest. He sat down at Mr. Sims' feet, playing havoc with the lawn with a toy dagger.

"Where's the poison, Grandpa?" he asked eagerly.

Mr. Sims lifted the boy up on to his knee and rumpled his hair playfully in a feeble attempt to ease the tension. The others stood around silently watching. No one made any move to sit down. It was their way of telling him they hoped they wouldn't have to wait

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too long. Mr. Sims suddenly wished he were in one of the quiet rooms of the palace, alone.

Cousin Nat was the first one to break the awkward silence. "Who in hell was that madman who brought us over here?"

"That's Mr. Hoode, the director," Mr. Sims explained. "He's quite an artist in his way."

"He's insane!" Nat said flatly. "All the way over, he talked about nothing but dying. Told us we could come here and die any way we wanted. If any of us wanted to go out like Early Christians, he would be only too happy to set up an arena for us. He even asked me if I wanted to put my name down for a rehash of Custer's Last Stand for 2013. With real bullets!" He passed his hand nervously through his thinning hair. "For God's sake, he must think I *want* to get scalped!"

"Didn't Dr. Van Stoke come with you?" Mr. Sims asked. "I wanted him to see the place he sends everyone."

"He went on an ocean cruise," young Mike said.

"Dr. Van Stoke? You mean he left his practice?"

"Yeah," the little boy answered. "Another doctor took his place."

Mr. Sims turned to the others for corroboration. "Is that right? I didn't think Van Stoke was a rich man. He was only around forty."

"He went with the money Uncle Nat gave him," the boy said.

"That'll be enough, Michael," Nat ordered sternly.

MR. SIMS laughed. "You're mistaken, Mike. Uncle Nat wouldn't give the doctor any money. He hasn't even got enough for himself."

"But he quit his job yesterday," said the boy.

Nat's voice cut in sharply. "That's enough from you. You know what they say about little boys."

Mr. Sims looked steadily at Nat as though seeing him for the first time. His cousin gazed back, half-sullen, half-defiant.

"It certainly didn't take you long to get your hands on the money," Mr. Sims said. "It looks as if I can't die soon enough. But I still don't see where Dr. Van Stoke comes into —"

Then suddenly there was no need to ask. The answer was clear on Nat's tight, sullen face.

Mr. Sims turned to the others for help and froze as identical expressions stared back coldly from each of them, piercing him with their long-hidden envy of his success, their pent-up hatred of their dependence on him.

A choking, frightened sound came from deep in Mr. Sims' throat. "For God's sake! *How*

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much did you pay him to put me away?"

He jumped quickly off the parapet, knocking the little boy to the ground, and hurled the hemlock into the fountain. He pushed his way past them and started to run. Then the woven garment twisted about his legs. He tried to lift it clear, but his foot caught in the hem and he stumbled.

Nat was the first to move. He picked up the little toy dagger and fell on the struggling man. Without hesitating, he plunged the knife between Mr. Sims' shoulder blades and held it till the older man was still. Then he stabbed again, without malice, without any emotion . . . again and again. . . The blade made an odd ripping sound each time it pierced the woven robe.

All of them looked away. One of the women leaned over the parapet, sick.

WHEN he was finally done, Nat stood up and cleaned the knife on the grass and then motioned them all back toward the palace.

Mr. Hoode met them as they walked through the foyer. "Ah, Socrates' friends!" he said to Nat, who was dabbing at the front of his coat with a piece of tissue. "Was everything in order?"

"There was a slight change of plan," Nat said. "He decided at the last moment to make it Julius Caesar." He held the knife up in explanation.

"*Julius Caesar!* But —"

But they were gone, filing out through the front door, the women sobbing in their handkerchiefs. No one looked back.

The door hissed quietly shut. Mr. Hoode started at the sound and then walked slowly into his office, seized by a cold, limp rage. From his window, he could see them going down the driveway.

"Amateurs," he spat after them with deep disgust. "Damned, lousy, unimaginative amateurs!"

—ALAN COGAN

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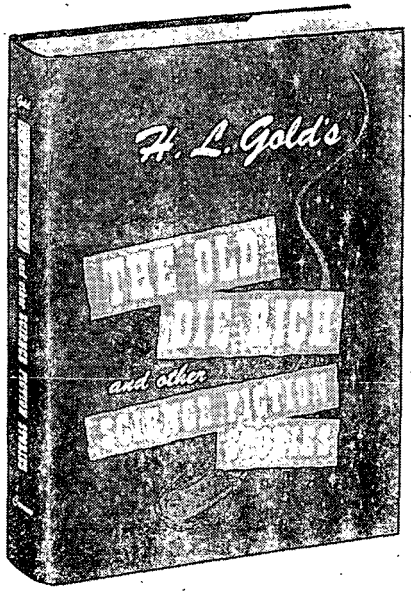

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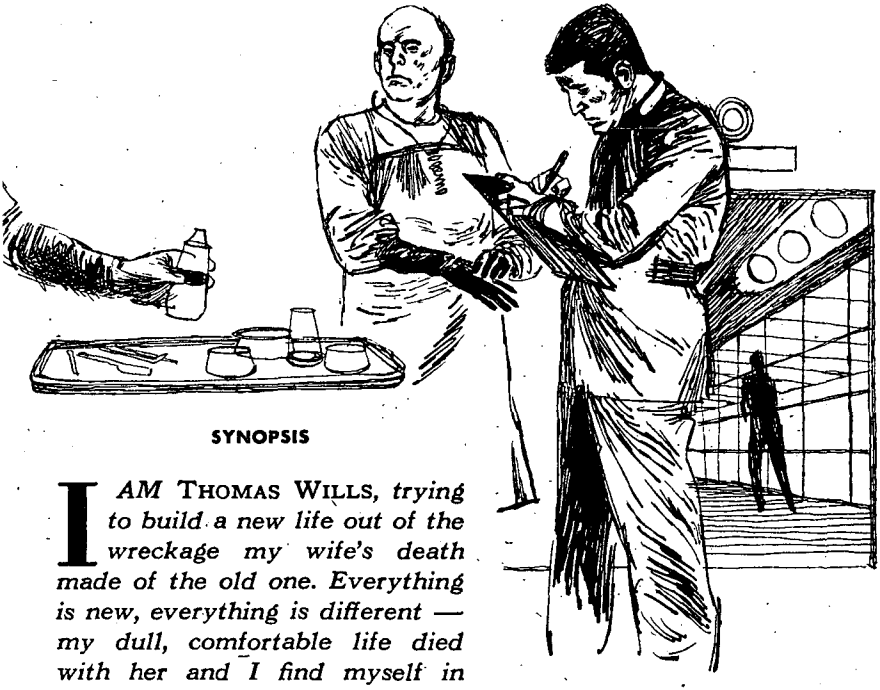
PREFERRED RISK

PART 2 OF A 4-PART SERIAL

By EDSON McCANN

The world, completely insured, was better off than ever before, yet why had there been a little war? Why was Rena uninsurable? Why were the vaults huge enough to hold the entire human race?

Illustrated by KOSSIN



SYNOPSIS

I AM THOMAS WILLS, *trying to build a new life out of the wreckage my wife's death made of the old one. Everything is new, everything is different — my dull, comfortable life died with her and I find myself in*

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romantic, war-ravaged Naples, on an errand of high adventure in the service of —

THE COMPANY, *the giant combine of insurance corporations which protects the world by insuring every one of its activities. It is the finest work of mankind; the Company has once and for all called a halt to war, poverty, disease and danger, by the most modern application of actuarial methods. Everyone knows this to be true, but I find that in Naples there are persons superstition-ridden enough to doubt it. Among them is a girl —*

RENA, *who thinks there is something sinister in the fact that Naples has just passed through a war — without recognizing how tiny it was — and that she and her father are in want because they are uninsurables, who hints that my wife died of a preventable disease, which is nonsense, of course, because —*

MARIANNA, *my wife, had been terrified of the vaults and had chosen to risk being one of the very few malignancy cases that don't respond to treatment. And she'd died unnecessarily because she had been one of the few.*

LUIGI ZORCHI *confuses and alarms me even more than Rena, however. He makes a career of collecting on accident claims. There is nothing fraudulent in his accidents — when he receives damages for a lost limb, the limb is actually lost — but he possesses the capacity of regrowing severed members or organs to the same degree that a salamander has! Worse still, I am dismayed by the insistence of Zorchi and Rena that the Company is corrupt and cynical.*

THE CLINICS *are their particular target. These are the vaults for suspended animation, where persons suffering from incurable diseases are kept until such time as medical science can cure them, or to allow radiation and such to go below the danger point. How could so humane a project possibly be considered evil?*

GOGARTY, *the Regional Director of the Company, is a problem. The Company shouldn't tolerate anyone so given to comfort and luxury instead of service. Why does it?*

HAMMOND, *the Caserta area Sub-director, seems better disciplined at first, but disappears from my side under odd circumstances. But just when my confusion is at its worst, good news comes in the form of —*

UNDERWRITER DEFOE, *a high executive of the Company and my late wife's distant relative, who got me into Cadet School in the first place. I hurry to meet him at the Clinic, hoping he will straighten me out. But what he has to tell me instead is blunt*

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and shocking: Hammond's disappearance was due to murder!

V

HAMMOND dead! He had had his faults, but he was an officer of the Company and a man I had met. Dead!

I asked, "How? What happened?"

"Perhaps you can tell me that, Thomas," said Defoe.

I sat startledly erect, shocked by the significance of the words. I said hotly, "Damn it, Mr. Defoe, you know I had nothing to do with this! I've been all over the whole thing with you and I thought you were on my side! Just because I said a lot of crazy things after Marianna died doesn't mean I'm anti-Company — and it certainly doesn't mean I'd commit murder. If you think that, then why the devil did you put me in cadet school?"

Defoe merely raised his hand by bending the wrist slightly; it was enough to stop me, though. "Gently, Thomas. I don't think you did it — that much should be obvious. And I put you in cadet school because I had work for you."

"But you said I knew something I was holding back."

Defoe waggled the hand reprovingly. "I said you might be able to tell me who killed Hammond. And so you might — but not yet. I count heavily on you for help in this area, Thomas. There are two urgent tasks to be done. Hammond's death —" he paused and shrugged, and the shrug was all of Hammond's epitaph — "is only an incident in a larger pattern; we need to work out the pattern itself."

He glanced again at the typed list Susan had handed him. "I find that I can stay in the Naples area for only a short time; the two tasks must be done before I leave. I shall handle one myself. The other I intend to delegate to you.

"First we have the unfortunate situation in regard to the state of public morale. Unfortunate? Perhaps I should say disgraceful. There is quite obviously a nucleus of troublemakers at work, Thomas, and Gogarty has not had the wit to find them and take the appropriate steps. Someone else must. Second, this Zorchi is an unnecessary annoyance. I do not propose to let the Company be annoyed, Thomas. Which assignment would you prefer?"

I said hesitantly, "I don't know if Mr. Gogarty would like me to —"

"Gogarty is an ass! If he had not blundered incessantly since he took over the district, I should not have had to drop important work to come here."

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I thought for a second. Digging out an undercover ring of troublemakers didn't sound particularly easy. On the other hand, I had already tried my luck with Zorchi.

"Perhaps you'd better try Zorchi," I said.

"Try?" Defoe allowed himself to look surprised. "As you wish. I think you will learn something from watching me handle it, Thomas. Shall we join Signore Zorchi now?"

"He's *here?*"

Defoe said impatiently, "Of course, Thomas. Come along."

ZORCHI'S secretary was there, too. He was in a small anteroom, sitting on a hard wooden chair; as we passed him, I saw the hostility in his eyes. He didn't say a word.

Beyond him, in an examination room, was Zorchi, slim, naked and hideous, sitting on the edge of a surgical cot and trying not to look ill at ease. He had been shaved from head to knee stumps. Esthetically, at least, it had been a mistake. I never saw such a collection of skin eruptions on a human.

He burst out, faster than my language-school Italian could follow, in a stream of argument and abuse. Defoe listened icily for a moment, then shut him up in Italian as good as his own. "Answer questions; otherwise keep quiet. I will not warn you again."

I don't know if even Defoe could have stopped Zorchi under normal conditions. But there is something about being naked in the presence of fully dressed opponents that saps the will; and I guessed, too, that the shaving had made Zorchi feel nakeder than ever before in his life. I could see why he'd worn a beard and I wished he still had it.

"Dr. Lawton," said Defoe, "have you completed your examination of the insured?"

A youngish medical officer of the Company said, "Yes, sir. I have the slides and reports right here; they just came up from the laboratory." He handed a stapled collection of photographic prints and papers to Defoe, who took his own good time to examine them while the rest of us stood and waited.

Defoe finally put the papers down and nodded. "In a word, this bears out our previous discussion."

Lawton nodded. "If you will observe his legs, you will see that the skin healing is complete; already a blastema has formed and —"

"I know," Defoe said impatiently. "Signore Zorchi, I regret to say that I have bad news for you."

Zorchi waved his hand defiant-

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ly. "*You* are the bad news."

Defoe ignored him. "You have a grave systemic imbalance. There is great danger of serious ill effects."

"To what?" snarled Zorchi. "The Company's bank account?"

"No, Zorchi. To your life." Defoe shook his head. "There are indications of malignancy."

"Malignancy?" Zorchi looked startled. "What kind? Do you mean cancer?"

"Exactly." Defoe patted his papers. "You see, Zorchi, healthy human flesh does not grow like a salamander's tail."

THE phone rang; impeccable in everything, Defoe waited while Dr. Lawton nervously answered it. Lawton said a few short words, listened for a moment and hung up, looking worried.

He said: "The crowd outside is getting rather large. That was the expediter-captain from the main gate. He says —"

"I presume he has standing orders," Defoe said. "We need not concern ourselves with that, need we?"

"Well —" The doctor looked unhappy.

"Now, Zorchi," Defoe went on, dismissing Lawton utterly, "do you enjoy life?"

"I despise it!" Zorchi spat to emphasize how much.

"But you cling to it. You would not like to die, would you? Worse still, you would not care to live indefinitely with carcinoma eating you piece by piece."

Zorchi just glowered suspiciously.

"Perhaps we can cure you, however," Defoe went on reflectively. "It is by no means certain. I don't want to raise false hopes. But there is the possibility —"

"The possibility that you will cure me of collecting on my policies, eh?" Zorchi demanded belligerently. "You are crazy, Defoe. Never!"

Defoe looked at him for a thoughtful moment. To Lawton, he said: "Have you this man's claim warranty? It has the usual application for medical treatment, I presume?" He nodded as Lawton confirmed it. "You see, Mr. Zorchi? As a matter of routine, no claim can be paid unless the policyholder submits to our medical care. You signed the usual form, so —"

"One moment! You people never put me through this before! Did you change the contract on me?"

"No, Signore Zorchi. The same contract, but this time we will enforce it. I think I should warn you of something, though."

He riffled through the papers and found a photographic print to show Zorchi. "This picture

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isn't you, Signore. It is a picture of a newt. The doctor will explain it to you."

The print was an eight-by-ten glossy of a little lizard with something odd about its legs. Puzzled, Zorchi held it as though the lizard were alive and venomous. But as the doctor spoke, the puzzlement turned into horror and fury.

"What Mr. Defoe means," said Lawton, "is that totipotency — that is, the ability to regenerate lost tissues, as you can, even when entire members are involved — is full of unanswered riddles. We have found, for instance, that X-ray treatment on your leg helps a new leg to form rapidly, just as it does on the leg of the salamanders. The radiation appears to stimulate the formation of the blastema, which — well, never mind the technical part. It speeds things up."

His eyes gleamed with scientific interest. "But we tried the experiment of irradiating limbs that had not been severed. It worked the same way, oddly enough. New limbs were generated *even though the old ones were still there.* That's why the salamander in the photo has four hands on one of its limbs — nine legs altogether, counting that half-formed one just beside the tail. Curious-looking little beast, isn't it?"

DEFOE cleared his throat. "I only mention, Signore, that the standard treatment for malignancy is X-radiation."

Zorchi's eyes flamed — rage battling it out with terror. He said shrilly, "But you can't make a laboratory animal out of me! I'm a policyholder!"

"Nature did it, Signore Zorchi, not us," Defoe said.

Zorchi's eyes rolled up in his head and closed; for a moment, I thought he had fainted and leaped forward to catch him rather than let his legless body crash to the floor. But he hadn't fainted. He was muttering, half aloud, sick with fear, "For the love of Mary, Defoe! Please, please, I beg you! Please!"

It was too much for me. I said, shaking with rage, "Mr. Defoe, you can't force this man to undergo experimental radiation that might make a monster out of him! I insist that you reconsider!"

Defoe threw his head back. *"What, Thomas?"* he snapped.

I said firmly, "He has no one here to advise him — I'll take the job. Zorchi, listen to me! You've signed the treatment application and he's right enough about that — you can't get out of it. *But you don't have to take this treatment!* Every policyholder has the right to refuse any new and unguaranteed course of treatment, no matter what the

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circumstances. All you've got to do is agree to go into suspension in the va — in the clinic here, pending such time as your condition can be infallibly cured. Do it, man! Don't let them make you a freak — demand suspension! What have you got to lose?"

I never saw a man go so to pieces as Zorchi, when he realized how nearly Defoe had trapped him into becoming a guinea pig. Whimpering thanks to me, he hastily signed the optional agreement for suspended animation and, as quickly as I could, I left him there.

Defoe followed me. We passed the secretary in the anteroom while Dr. Lawton was explaining the circumstances to him; the man was stricken with astonishment, almost too paralyzed to sign the witnessing form Defoe had insisted on. I knew the form well — I had been about to sign one for Marianna when, at the last moment, she decided against the vaults in favor of the experimental therapy that hadn't worked.

Outside in the hall, Defoe stopped and confronted me. I braced myself for the blast to end all blasts.

I could hardly believe my eyes. The great stone face was smiling!

"Thomas," he said inexplicably, "that was masterful. I couldn't have done better myself."

VI

WE walked silently through the huge central waiting room of the clinic.

There should have been scores of relatives of suspendees milling around, seeking information — there was, I knew, still a steady shipment of suspendees coming in from the local hospitals; I had seen it myself. But there were hardly more than a dozen or so persons in sight, with a single clerk checking their forms and answering their questions.

It was too quiet. Defoe thought so, too; I saw his frown.

Now that I had had a few moments to catch my breath, I realized that I had seen a master judoist at work. It was all out of the textbooks — as a fledgling Claims Adjuster, I had had the basic courses in handling difficult cases — but not one man in a million could apply textbook rules as skillfully and successfully as Defoe did with Zorchi.

Push a man hard and he will lunge back; push him hard enough and persistently enough, and he will lunge back farther than his vision carries him, right to the position you planned for him in the first place. And I, of course, had been only a tool in Defoe's hand; by interceding for Zorchi, I had tricked the man into the surrender Defoe wanted.

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And he had complimented me for it!

I couldn't help wondering, though, whether the compliment Defoe gave me was part of some still subtler scheme . . .

Defoe nodded curtly to the expediter-captain at the door, who saluted and pressed the teleswitch that summoned Defoe's limousine.

DEFOE turned to me. "I have business in Rome and must leave at once. You will have to certify Zorchi's suspension this afternoon; since I won't be here, you'll have to come back to the clinic for it. After that, Thomas, you can begin your assignment."

I said uncertainly, "What — where shall I begin?"

One eyebrow lifted a trifle. "Where? Wherever you think proper, Thomas. Or must I handle this myself?"

The proper answer, and the one I longed to make, was "Yes." Instead I said, "Not at all, Mr. Defoe. It's only that I didn't even know there was an undercover group until you told me about it a few moments ago; I don't know exactly where to start. Gogarty never mentioned —"

"Gogarty," he cut in, "is very likely to be relieved as District Administrator before long. I should like to replace him with someone already on the scene —" he glanced at me to be sure I understood — "provided, that is, that I can find someone of proven competence. Someone who has the ability to handle this situation without the necessity of my personal intervention."

The limousine arrived then, with an armed expediter riding beside the chauffeur. Defoe allowed me to open the door for him and follow him in.

"Do you understand me?" he asked as the driver started off.

"I think so," I said.

"Good. I do not suppose that Gogarty has given you any information about the malcontents in this area."

"No."

"It may be for the best; his information is clearly not good." Defoe stared broodingly out the window at the silent groups of men and women on the grass before the clinic. "Your information is there," he said as they passed out of sight. "Learn what you can. Act when you know enough. And, Thomas —"

"Yes?"

"Have you given thought to your future?"

I shifted uncomfortably. "Well, I've only been a Claims Adjuster a little while, you know. I suppose that perhaps I might eventually get promoted, even become a District Administrator —"

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He looked at me impersonally. "Dream higher," he advised.

I stood watching after Defoe's limousine, from the marquee of the hotel where he had left me to take a room and freshen up. *Dream higher.* He had the gift of intoxication.

Higher than a District Administrator! It could mean only — the Home Office.

Well, it was not impossible, after all. The Home Office jobs had to go to someone; the supermen who held them now — the Defoes and the Carmodys and the dozen or more others who headed up departments or filled seats on the Council of Underwriters — couldn't live forever. And the jobs had to be filled by someone.

Why not me? Only one reason, really. I was not a career man. I hadn't had the early academy training from adolescence on; I had come to the service of the Company itself relatively late in life. The calendar legislated against me.

Of course, I thought to myself, I was in a pretty good position, in a way, because of Defoe's evident interest in me. With him helping and counseling me, it might be easier.

I thought that and then I stopped myself, shocked. I was thinking in terms of personal preferment. That was not the Company way! If I had learned anything in my training, I had learned that Advancement was on merit alone.

Advancement *had* to be on merit alone . . . else the Company became an oligarchy, deadly and self-perpetuating.

Shaken, I sat in the dingy little hotel room that was the best the town of Anzio had for me and opened my little Black Book. I thumbed through the fine-printed pages of actuarial tables and turned to the words of Millen Carmody, Chief Underwriter, in the preface. They were the words that had been read to me and the others at our graduation at the Home Office, according to the tradition:

Remember always that the Company serves humanity, not the reverse. The Company's work is the world's work. The Company can end, forever, the menace of war and devastation; but it must not substitute a tyranny of its own. Corruption breeds tyrants. Corruption has no place in the Company.

They were glorious words. I read them over again, and stared at the portrait of Underwriter Carmody that was the frontispiece of the handbook. It was a face to inspire trust — wise and human, grave, but with warmth in the

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wide-spaced eyes.

Millen Carmody was not a man you could doubt. As long as men like him ran the Company — and he was the boss of them all, *the* Chief Underwriter, the highest position the Company had to offer — there could be no question of favoritism or corruption.

AFTER eating, I shaved, cleaned up a little and went back to the clinic.

There was trouble in the air, no question of it. More expediters were in view, scattered around the entrance, a dozen, cautious yards away from the nearest knots of civilians. Cars with no official company markings, but with armor-glass so thick that it seemed yellow, were parked at the corners. And people were everywhere.

People who were quiet. Too quiet. There were some women — but not enough to make the proportion right. And there were no children.

I could almost feel the thrust of their eyes as I entered the clinic.

Inside, the aura of strain was even denser. If anything, the place looked more normal than it had earlier; there were more people. The huge waiting room was packed and a dozen sweating clerks were interviewing long lines of persons. But here, as outside, the feeling was wrong; the crowds weren't noisy enough; they lacked the nervous boisterousness they should have had.

Dr. Lawton looked worried. He greeted me and showed me to a small room near the elevators. There was a cocoon of milky plastic on a wheeled table; I looked closer, and inside the cocoon, recognizable through the clear plastic over the face, was the waxlike body of Luigi Zorchi. The eyes were closed and he was completely still. I would have thought him dead if I had not known he was under the influence of the drugs used in the suspension of life in the vaults.

I said: "Am I supposed to identify him or something?"

"We know who he is," Lawton snorted. "Sign the commitment, that's all."

I signed the form he handed me, attesting that Luigi Zorchi, serial number such-and-such, had requested and was being granted immobilization and suspension in lieu of cash medical benefits. They rolled the stretcher-cart away, with its thick foam-plastic sack containing the inanimate Zorchi.

"Anything else?" I asked.

Lawton shook his head moodily. "Nothing you can help with. I told Defoe this was going to happen!"

"What?"

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He glared at me. "Man, didn't you just come in through the main entrance? Didn't you see that mob?"

"Well, I wouldn't call it a mob," I began.

"You wouldn't *now*," he broke in. "But you will soon enough. They're working themselves up. Or maybe they're waiting for something. But it means trouble, I promise, and I warned Defoe about it. And he just stared at me as if I was some kind of degenerate."

I SAID sharply, "What are you afraid of? Right outside, you've got enough expediters to fight a war."

"Afraid? Me?" He looked insulted. "Do you think I'm worried about my own skin, Wills? No, sir. But do you realize that we have suspendees here who need protection? Eighty thousand of them. A mob like that —"

"Eighty *thousand?*" I stared at him. The war had lasted only a few weeks!

"Eighty thousand. A little more, if anything. And every one of them is a ward of the Company as long as he's suspended. Just think of the damage suits, Wills."

I said, still marveling at the enormous number of casualties out of that little war, "Surely the suspendees are safe here, aren't they?"

"Not against mobs. The vaults can handle anything that might happen in the way of disaster. I don't think an H-bomb right smack on top of them would disturb more than the top two or three decks at most. But you never know what mobs will do. If they once get in here — And Defoe wouldn't listen to me!"

As I went back into the hall, passing the main entrance, the explosion burst.

I stared out over the heads of the dreadfully silent throng in the entrance hall, looking toward the glass doors, as was everyone else inside. Beyond the doors, an arc of expediters was retreating toward us; they paused, fired a round of gas-shells over the heads of the mob outside, and retreated again.

Then the mob was on them, in a burst of screaming fury. Hidden gas guns appeared, and clubs, and curious things that looked like slingshots. The crowd broke for the entrance. The line of expediters wavered but held. There was a tangle of hand-to-hand fights, each one a vicious struggle. But the expediters were professionals; outnumbered forty to one, they savagely chopped down their attackers with their hands, their feet and the stocks of their guns. The crowd hesitated. No shot had yet been fired, except toward the sky.

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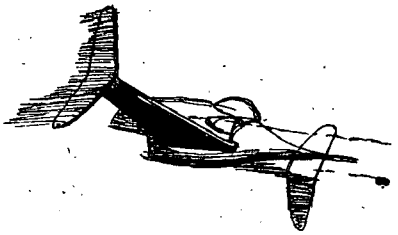
The air whined and shook. From low on the horizon, a needle-nosed jet thundered in. A plane! Aircraft never flew in the restricted area over the Company's major installations. Aircraft didn't barrel in at treetop height, fast and low, without a hint of the recognition numbers every aircraft had to carry.

From its belly sluiced a silvery milt of explosives as it came in over the heads of the mob, peeled off and up and away, then circled out toward the sea for another approach. A hail of tiny blasts rattled in the clear space between the line of expediters and the entrance. The big doors shook and cracked.

THE expediters stared white-faced at the ship. And the crowd began firing. An illegal hard-pellet gun peppered the glass of the doors with pockmarks. The guarding line of expediters was simply overrun.

Inside the waiting room, where I stood frozen, hell broke out. The detachment of expediters, supervising the hundreds inside leaped for the doors to fight back the surging mob. But the mob inside the doors, the long orderly lines before the interviewing clerks, now split into a hundred screaming, milling centers of panic. Some rushed toward the doors; some broke for the halls of the vaults themselves. I couldn't see what was going on outside any more. I was swamped in a rush of women panicked out of their senses.

Panic was like a plague. I saw doctors and orderlies struggling against the tide, a few scattered expediters battling to turn back the terrified rush. But I was swept along ahead of them all, barely able to keep my feet. An expediter fell a yard from me. I caught up his gun and began striking out. For this was what Lawton had feared — the mob loose in the vaults!



I raced down a side corridor, around a corner, to the banked elevators that led to the deeps of the clinic. There was fighting there, but the elevator doors were closed. Someone had had the wit to lock them against the mob. But there were stairs; I saw an emergency door only a few yards away. I hesitated only long

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enough to convince myself, through the fear, that my duty was to the Company and to the protection of its helpless wards below. I bolted through the door and slammed it behind me, spun the levers over and locked it. In a moment, I was running down a long ramp toward the cool immensities of the vaults.

If Lawton had not mentioned the possible consequences of violence to the suspendees, I suppose I would have worried only about my own skin. But here I was. I stared around, trying to get my bearings. I was in a sort of plexus of hallways, an open area with doors on all sides leading off to the vaults. I was alone; the noise from above and outside was cut off completely.

No, I was not alone! I heard running footsteps, light and quick, from another ramp. I turned in time to see a figure speed down it, pause only a second at its base, and disappear into one of the vaults. It was a woman, but not a woman in nurse's uniform. Her back had been to me, yet I could see that one hand held a gas gun, the other something glittering and small.

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I followed, not quite believing what I had seen. For I had caught only a glimpse of her face, far off and from a bad angle — but I was as sure as ever I could be that it was Rena dell'Angela!

SHE didn't look back. She was hurrying against time, hurrying toward a destination that obsessed her thoughts. I followed quietly enough, but I think I might have thundered like an elephant herd and still been unheard.

We passed a strange double-walled door with a warning of some sort lettered on it in red; then she swung into a side corridor where the passage was just wide enough for one. On either side were empty tiers of shelves waiting for suspendees. I speeded up to reach the corner before she could disappear.

But she wasn't hurrying now. She had come to a bay of shelves where a hundred or so bodies lay wrapped in their plastic sacks, each to his own shelf. Dropping to her knees, she began checking the tags on the cocoons at the lowest level.

She whispered something sharp and imploring. Then, straightening abruptly, she dropped the gas gun and took up the glittering thing in her other hand. Now I could see that it was a hypodermic kit in a crystal case. From it she took a little flask of purplish liquid and, fingers shaking, shoved the needle of the hypodermic into the plastic stopper of the vial.

Moving closer, I said: "It won't work, Rena."

She jumped and swung to face me, holding the hypodermic like a stiletto. Seeing my face, she gasped and wavered.

I stepped by her and looked down at the tag on the cocooned figure. *Benedetto dell'Angela, Napoli,* it said, and then the long string of serial numbers that identified him.

It was what I had guessed.

"It won't work," I repeated. "Be smart about this, Rena. You can't revive him without killing him."

Rena half-closed her eyes. She whispered, "Would death be worse than this?"

I hadn't expected this sort of superstitious nonsense from her. I started to answer, but she had me off guard. In a flash, she raked the glittering needle toward my face and, as I stumbled back involuntarily, her other hand lunged for the gas gun I had thrust into my belt.

Only luck saved me. Not being in a holster, the gun's front sight caught and I had the moment I needed to cuff her away. She gasped and spun up against the tiers of shelves. The filled hypo-

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dermic shattered against the floor, spilling the contents into a purple, gleaming pool of fluorescence.

RENA took a deep breath and stood erect. There were tears in her eyes again.

She said in a detached voice: "Well done, Mr. Wills."

"Are you crazy?" I crackled. "This is your father. Do you want to kill him? It takes a doctor to revive him. You're an educated woman, Rena, not a witch-ridden peasant! You know better than this!"

She laughed — a cold laugh. "Educated! A peasant woman would have kicked you to death and succeeded. I'm educated, all right! Two hundred men, a plane, twenty women risking themselves up there to get me through the door. All our plans — and I can't remember a way to kill you in time. I'm too educated to hate you, Claims Adjuster Wills!" She choked on the words. Then she shook her head dully. "Go ahead, turn me in and get it over with."

I took a deep breath. Turn her in? I hadn't thought that far ahead. True, that was the obvious thing to do; she had confessed that the whole riot outside was a diversion to get her down in the vaults, and anyone who could summon up that sort of organized anti-Company violence was someone who automatically became my natural enemy.

But perhaps I was too educated and too soft as well. There had been tears on her face, over her father's body. I could not remember having heard that conspirators cried.

And I sympathized a little. I had known what it was like to weep over the body of someone I loved. Despite our difficulties, despite everything, I would have done anything in the world to bring Marianna back to life. I couldn't. Rena — she believed — could revive her father.

I didn't want to turn her in.

I *shouldn't* turn her in. It was my duty *not* to turn her in, for hadn't Defoe himself ordered me to investigate the dissident movement of which she was clearly a part? Wouldn't it be easier for me to win her confidence, and trick her into revealing its secrets, than to have her arrested?

The answer, in all truth, was *No*. She was not a trickable girl, I was sure. But it was, at least, a rationale, and I clung to it.

I COUGHED and said: "Rena, will you make a bargain?"

She stared drearily. "Bargain?"

"I have a room at the Umberto. If I get you out of here, will you go to my room and wait for me there?"

Her eyes narrowed sharply for a second. She parted her lips to

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say something, but only nodded.

"Your word, Rena? I don't want to turn you in."

She looked helplessly at the purple spilled pool on the floor, and wistfully at the sack that held her father. Then she said, "My word on it. But you're a fool, Tom!"

"I know it!" I admitted.

I hurried her back up the ramp, back toward the violence upstairs. If it was over, I would have to talk her out of the clinic, somehow cover up the fact that she had been in the vaults. If it was still going on, though —

It was.

We blended ourselves with the shouting, rioting knots. I dragged her into the main waiting room, saw her thrust through the doors. Things were quieting even then. And I saw two women hastening toward her through the fight, and I do not think it was a coincidence that the steam went out of the rioters almost at once.

I stayed at the clinic until everything was peaceful again, though it was hours.

I wasn't fooling myself. I didn't have a shred of real reason for not having her arrested. If she had information to give, I was not the type to trick it out of her — even if she really was waiting at the Umberto, which was, in itself, not likely. If I had turned her in, Defoe would have had the information out of her in moments; but not I.

She was an enemy of the Company.

And I was unable to betray her.

VII

DR. LAWTON, who seemed to be Chief Medical Officer for Anzio Clinic, said grimly: "This wasn't an accident. It was planned. The question is, why?"

The expediters had finished driving the rioters out of the clinic itself, and gas guns were rapidly dispersing the few left outside the entrance. At least thirty unconscious forms were scattered around — and one or two that were worse than unconscious.

I said, "Maybe they were hoping to loot the clinic." It wasn't a very good lie. But then, I hadn't had much practice in telling lies to an officer of the Company.

Lawton pursed his lips and ignored the suggestion. "Tell me something, Wills. What were you doing down below?"

I said quickly, "Below? You mean a half an hour ago?"

"That's what I mean." He was gentle, but — well, not exactly suspicious. Curious.

I improvised: "I — I thought I saw someone running down there. One of the rioters. So I

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chased after her — after *him*," I corrected, swallowing the word just barely in time.

He nodded. "Find anything?"

It was a tough question. Had I been seen going in or coming out? If it was coming out — Rena had been with me.

I took what we called a "calculated risk" — that is, I got a firm grip on my courage and told a big fat and possibly detectable lie. I said, "Nobody that I could find. But I still think I heard something. The trouble is, I don't know the vaults very well. I was afraid I'd get lost."

Apparently it was on the way in that I had been spotted, for Lawton said thoughtfully, "Let's take a look."

We took a couple of battered expediters with us — I didn't regard them as exactly necessary, but I couldn't see how I could tell Lawton that. The elevators were working again, so we came out in a slightly different part of the vaults than I had seen before; it was not entirely acting on my part when I peered around.

Lawton accepted my statement that I wasn't quite sure where I had heard the noises, without argument. He accepted it all too easily; he sent the expediters scouring the corridors at random.

And, of course, one of them found the pool of spilled fluorescence from the hypodermic needle I had knocked out of Rena's hand.

WE STOOD there peering at the smear of purplish color, the shattered hypodermic, Rena's gas gun.

Lawton mused, "Looks like someone's trying to wake up some of our sleepers. That's our standard antilytic, if I'm not mistaken." He scanned the shelves. "Nobody missing around here. Take a look in the next few sections of the tiers."

The expediters saluted and left.

"They won't find anyone missing," Lawton predicted. "And *that* means we have to take a physical inventory of the whole damn clinic. Over eighty thousand suspendees to check." He made a disgusted noise.

I said, "Maybe they were scared off before they finished."

"Maybe. Maybe not. We'll have to check, that's all."

"Are you sure that stuff is to revive the suspendees?" I persisted. "Couldn't it just have been someone wandering down here by mistake during the commotion and —"

"And carrying a hypodermic needle by mistake, and armed with a gas gun by mistake. Sure, Wills."

The expediters returned and

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Lawton looked at them sourly.

They shook their heads. He shrugged. "Tell you what, Wills," he said. "Let's go back to the office and —"

He stopped, peering down the corridor. The last of our expediters was coming toward us — not alone.

"Well, what do you know!" said Lawton. "Wills, it looks like he's got your fugitive!"

The expediter was dragging a small writhing figure behind him; we could hear whines and pleading. For a heart-stopping second, I thought it was Rena, against all logic.

But it wasn't. It was a quavery ancient, a bleary-eyed wreck of a man, long past retirement age, shabbily dressed and obviously the sort who cut his pension policies to the barest minimum — and then whined when his old age was poverty-stricken.

Lawton asked me: "This the man?"

"I — I couldn't recognize him," I said.

LAWTON turned to the weeping old man. "Who were you after?" he demanded. All he got was sobbing pleas to let him go; all he was likely to get was more of the same. The man was in pure panic.

We got him up to one of the receiving offices on the upper level, half carried by the expediters. Lawton questioned him mercilessly for half an hour before giving up. The man was by then incapable of speech.

He had said, as nearly as we could figure it out, only that he was sorry he had gone into the forbidden place, he didn't mean to go into the forbidden place, he had been sleeping in the shadow of the forbidden place when fighting began and he fled inside.

It was perfectly apparent to me that he was telling the truth — and, more, that any diversionary riot designed to get *him* inside with a hypodermic and gas gun would have been planned by maniacs, for I doubted he could have found the trigger of the gun. But Lawton seemed to think he was lying.

It was growing late. Lawton offered to drive me to my hotel, leaving the man in the custody of the expediters. On the way, out of curiosity, I asked: "Suppose he had succeeded? Can you revive a suspendee as easily as that, just by sticking a needle in his arm?"

Lawton grunted. "Pretty near, that and artificial respiration. One case in a hundred might need something else — heart massage or an incubator, for instance. But most of the time an antilytic shot is enough."

Then Rena had not been as

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mad as I thought.

I said: "And do you think that old man could have accomplished anything?"

Lawton looked at me curiously. "Maybe."

"Who do you suppose he was after?"

Lawton said off-handedly. "He was right near Bay 100, wasn't he?"

"Bay 100?" Something struck a chord; I remembered following Rena down the corridor, passing a door that was odd in some way. Was the number 100 on that door? "Is that the one that's locked off, with the sign on it that says anybody who goes in is asking for trouble?"

"That's the one. Though," he added, "nobody is going to get in. That door is triple-plate armor; the lock opens only to the personal fingerprint pattern of Defoe and two or three others."

"What's inside it that's so important?"

He said coldly, "How would I know? I can't open the door." And that was the end of the conversation. I knew *he* was lying.

I HAD changed my bet with myself on the way. I won it. Rena was in the room waiting for me. She was sound asleep, stretched out on the bed. She looked as sober-faced and intent in her sleep as a little girl — a look I had noticed in Marianna's sleeping face once.

It was astonishing how little I thought about Marianna any more.

I considered very carefully before I rang for a bellboy, but it seemed wisest to let her sleep and take my chances with the house detective, if any. There was none, it turned out. In fact, the bellboy hardly noticed her — whether out of indifference or because he was well aware that I had signed for the room with an official travel-credit card of the Company, it didn't much matter. He succeeded in conveying, without saying a word, that the Blue Sky was the limit.

I ordered dinner, waving away the menu and telling him to let the chef decide. The chef decided well. Among other things, there was a bottle of champagne in a bucket of ice.

Rena woke up slowly at first, and then popped to a sitting position, eyes wide. I said quickly, "Everything's all right. No one saw you at the clinic."

She blinked once. In a soft voice, she said, "Thank you." She sighed a very small sigh and slipped off the bed.

I realized as Rena was washing up, comparisons were always odious, but — Well, if a strange man had found Marianna with her dress hitched halfway up her

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thigh, asleep on his bed, he'd have been in for something. What the "something" would be might depend on circumstances; it might be a raging order to knock before he came in, it might only be a storm of blushes and a couple of hours of meticulously prissy behavior. But she wouldn't just let it slide. And Rena, by simply disregarding it, was as modest as any girl could be.

After all, I told myself, warming to the subject, it wasn't as if I were some excitable adolescent. I could see a lovely girl's legs without getting all stirred up. For that matter, I hardly even noticed them, come to think of it. And if I *did* notice them, it was certainly nothing of any importance; I had dismissed it casually, practically forgotten it, in fact.

She came back and said cheerfully, "I'm hungry!" And so, I realized, was I.

We started to eat without much discussion, except for the necessary talk of the table. I felt very much at ease sitting across from her, in spite of the fact that she had placed herself in opposition to the Company. I felt relaxed and comfortable; nothing bothered me. Certainly, I went on in my mind, I was as free and easy with her as with any man; it didn't matter that she was an attractive girl at all. I wasn't thinking of her in that way, only as someone who needed some help.

I came to. She was looking at me with friendly curiosity. She said, "Is that an American idiom, Tom, when you said, 'Please pass the legs'?"

WE DIDN'T open the champagne: it didn't seem quite appropriate. We had not discussed anything of importance while we were eating, except that I had told her about the old man; she evidently knew nothing about him. She was concerned, but I assured her he was safe with the Company — what did she think they were, barbarians? She didn't answer.

But after dinner, with our coffee, I said: "Now let's get down to business. What were you doing in the clinic?"

"I was trying to rescue my father," she said.

"Rescue, Rena? Rescue from what?"

"Tom, please. You believe in the Company, do you not?"

"Of course!"

"And I do not. We shall never agree. I am grateful to you for not turning me in, and I think perhaps I know what it cost you to do it. But that is all, Tom."

"But the Company —"

"When you speak of the Company, what is it you see? Something shining and wonderful? It

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is not that way with me; what I see is — rows of my friends, frozen in the vaults or the expediters and that poor old man you caught."

There was no reasoning with her. She had fixed in her mind that all the suspendees were the victims of some sinister brutality. Of course, it wasn't like that at all.

Suspension wasn't death; everyone knew that. In fact, it was the antithesis of death. It *saved* lives by taking the maimed and sick and putting them mercifully to sleep, until they could be repaired.

True, their bodies grew cold, the lungs stopped pumping, the heart stopped throbbing; true, no doctor could tell, on sight, whether a suspendee was "alive" or "dead." The life processes were not entirely halted, but they were slowed enormously — enough so that chemical diffusion in the jellylike blood carried all the oxygen the body needed. But there was a difference: The dead were dead, whereas the suspendees could be brought back to life at any moment the Company chose.

But I couldn't make her see that. I couldn't even console her by reminding her that the old man was a mere Class E. For so was she.

I urged reasonably: "Rena, you think something is going on under the surface. Tell me about it. Why do you think your father was put in suspension?"

"To keep him out of the way. Because the Company is afraid of him."

I played a trump card: "Suppose I told you the *real* reason he's in the vaults."

SHE was hit by that, I could tell. She was staring at me with wonder in her eyes.

"You don't have to speculate about it, Rena. I looked up his record, you see."

"You — you —"

I nodded. "It's right there in black and white. They're trying to save his life. He has radiation poisoning. He was a war casualty. It's standard medical practice in cases like his to put them in suspension for a while, until the level of radioactivity dies down and they can safely be revived. Now what do you say?"

She merely stared at me.

I pressed on persuasively: "Rena, I don't mean to call your beliefs superstitions or anything like that. Please understand me. You have your own cultural heritage and — well, I know that it looks as though he is some kind of 'undead,' or however you put it, in your folk stories. I know there are legends of vampires and zombies and so on, but —"

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She was actually laughing. "You're thinking of Central Europe, Tom, not Naples. And anyway —" she was laughing only with her eyes now — "I do not believe that the legends say that vampires are produced by intravenous injections of chlorpromazine and pethidine in a lytic solution — which is, I believe, the current technique at the clinics."

I flared peevishly: "Damn it, don't you want him saved?"

The laughter was gone. She gently touched my hand. "I'm sorry. I don't mean to be a shrew and that remark wasn't kind. Must we discuss it?"

"Yes!"

"Very well." She faced me, chin out and fierce. "My father does not have radiation poisoning, Tom."

"He does."

"He does not! He is a prisoner, not a patient. He loved Naples. That's why he was put to sleep — for fifty years, or a hundred, until everything he knew and loved grows away from him and nobody cares what he has to say any more. They won't kill him — they don't have to! They just want him out of the way, because he sees the Company for what it is."

"And what is that?"

"Tyranny, Tom," she said quietly.

I BURST out, "Rena, that's silly! The Company is the hope of the world. If you talk like that, you'll be in trouble. That's dangerous thinking, young lady. It attacks the foundations of our whole society!"

"Good! I was hoping it would!"

We were shouting at each other like children. I took time to remember one of the priceless rules out of the Adjusters' Handbook: *Never lose your temper; think before you speak.* We glared at each other in furious silence for a moment before I forced myself to simmer down.

Only then did I remember that I needed to know something she might be able to tell me. Organization, Defoe had said — an organization that opposed the Company, that was behind Hammond's death and the riot at the clinic and more, much more.

"Rena, why did your friends kill Hammond?"

Her poise was shaken. "Who?" she asked.

"Hammond. In Caserta. By a gang of anti-Company hoodlums."

Her eyes flashed, but she only said: "I know nothing of any killings."

"Yet you admit you belong to a subversive group?"

"I admit nothing," she said shortly.

"But you do. I know you do. You said as much to me, when

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you were prevented from reviving your father."

She shrugged.

I went on: "Why did you call me at the office, Rena? Was it to get me to help you work against the Company?"

She looked at me for a long moment. Then she said: "It was. And would you like to know why I picked you?"

"Well, I suppose —"

"Don't suppose, Tom." Her nostrils were white. She said coldly: "You seemed like a very good bet, as far as we could tell. I will tell you something you don't know. There is a memorandum regarding you in the office of the Chief of Expediters in Naples. I do not choose to tell you how I know of it, but even your Mr. Gogarty doesn't know it exists. It is private and secret, and it says of you, 'Loyalty doubtful. Believed in contact with underground movement. Keep under close but secret surveillance'."

THAT one rocked me, I admit. "But that's all wrong!" I finally burst out. "I admit I went through a bad time after Marianna died, but —"

She was smiling, though still angry. "Are you apologizing to *me?*"

"No, but —" I stopped. That was a matter to be taken up with Defoe, I told myself, and I was beginning to feel a little angry, too.

"All right," I said. "There's been a mistake; I'll see that it's straightened out. But even if it was true, did you think I was the kind of man to join a bunch of murderers?"

"We are not murderers!"

"Hammond's body says different."

"We had nothing to do with that, Tom!"

"Your friend Slovetski did." It was a shot in the dark. It missed by a mile.

She said loftily: "If he is such a killer, how did you escape? When I had my interview with you, and it became apparent that the expediters were less than accurate, the information came a little late. You could easily have given us trouble — Slovetski was in the next room. Why didn't he shoot you dead?"

"Maybe he didn't want to be bothered with my body."

"And maybe you are all wrong about us!"

"No! If you're against the Company, I *can't* be wrong. The Company is the greatest blessing the world has ever known — it's made the world a paradise!"

"It has?" She made a snorting sound. "How?"

"By bringing countless blessings to all of us. *Countless!*"

She was shaking with the effort

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of controlling her temper. "Name one!"

I swore in exasperation. "All right," I said. "It ended war."

She nodded — not a nod of agreement, but because she had expected that answer. "Right out of the textbooks and propaganda pieces, Tom. Tell me, why is my father in the vaults?"

"Because he has radiation poisoning!"

"And how did he get this radiation poisoning?"

"How?" I blinked at her. "You know how, Rena. In the war between Naples and — the war —"

RENA said remorselessly, "That's right, Tom, the war. The war that couldn't have existed, because the Company ended war — everybody knows that. Ah, Tom! For God, tell me, why is the world blind? Everyone believes, no one questions. The Company ended war — it says so itself. And the blind world never sees the little wars that rage, all the time, one upon the heels of another. The Company has ended disease. But how many deaths are there? The Company has abolished poverty. But am I living in riches, Tom? Was the old man who ran into the vaults?"

I stammered, "But — but, Rena, the statistical charts show very clearly —"

"No, Tom," she said, gentle again. "The statistical charts show *less* war, not no war. They show *less* disease."

She rubbed her eyes wearily — and even then I thought: Marianna wouldn't have dared; it would have smeared her mascara.

"The trouble with you, Tom, is that you're an American. You don't know how it is in the world, only in America. You don't know what it was like after the Short War, when America won and the flying squads of Senators came over and the governments that were left agreed to defederate. You're used to a big and united country, not little city-states. You don't have thousands of years of intrigue and tyranny and plot behind you, so you close your eyes and plunge ahead, and if the charts show things are getting a *little* better, you think they are perfect."

She shook her head. "But not us, Tom. We can't afford that. We walk with eyes that dart about, seeking danger. Sometimes we see ghosts, but sometimes we see real menace. You look at the charts and you see that there are fewer wars than before. We — we look at the charts and we see our fathers and brothers dead in a little war that hardly makes a ripple on the graph. You don't even see them, Tom. You don't even see the disease cases that don't get

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cured — because the techniques are 'still experimental,' they say. You don't — Tom! What is it?"

I suppose I showed the pain of remembrance. I said with an effort, "Sorry, Rena. You made me think of something. Please go on."

"That's all of it, Tom. You in America can't be blamed. The big lie — the lie so preposterous that it cannot be questioned, the thing that proves itself because it is so unbelievable that no one would say it if it weren't true — is not an American invention. It is European, Tom. You aren't inoculated against it. We are."

I TOOK a deep breath. "What about your father, Rena? Do you really think the Company is out to get him?"

She looked at me searchingly, then looked hopelessly away. "Not as you mean it, Tom," she said at last. "No, I am no paranoid. I think he is — inconvenient. I think the Company finds him less trouble in the deep-freeze than he would be walking around."

"But don't you agree that he needs treatment?"

"For what? For the radiation poisoning that he got from the atomic explosion he was nowhere near, Tom? Remember, he is my father! I was with him in the war — and he never stirred a kilometer from our home. You've been there, the big house where my aunt Luisa now lives. Did you see bomb craters there?"

"That's a lie!" I had to confess it to myself: Rena was beginning to mean something to me. But there were emotional buttons that even she couldn't push. If she had been a man, any man, I would have had my fist in her face before she had said that much; treason against the Company was more than I could take. "You can't convince me that the Company deliberately falsifies records. Don't forget, Rena, I'm an executive of the Company! Nothing like that could go on!"

Her eyes flared, but her lips were rebelliously silent.

I said furiously: "I'll hear no more of that. Theoretical discussions are all right; I'm as broad-minded as the next man. But when you accuse the Company of outright fraud, you — well, you're mistaken."

We glowered at each other for a long moment. My eyes fell first.

I said sourly, "I'm sorry if I called you a liar. I — I didn't mean to be offensive."

"Nor I, Tom." she hesitated. "Will you remember that I asked you not to make me discuss it?"

She stood up. "Thank you very much for a dinner. And for listening. And most of all, for giving me another chance to rescue my father."

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I looked at my watch automatically — and incredulously. "It's late, Rena. Have you a place to stay?"

She shrugged. "N — yes, of course, Tom. Don't worry about me; I'll be all right."

"Are you sure?"

"Very sure."

HER manner was completely confident — so much so that I knew it for an act.

I said: "Please, Rena, you've been through a tough time and I don't want you wandering around. You can't get back to Naples tonight."

"I know."

"Well?"

"Well what, Tom?" she said. "I won't lie to you — I haven't a place to go to here. I would have had, this afternoon, if I had succeeded. But by now, everything has changed. They — that is, my friends will assume that I have been captured by the Company. They won't be where I could find them, Tom. Say they are silly if you wish. But they will fear that the Company might — request me to give their names."

I said crisply, "Stay here, Rena. No — listen to me. You stay here. I'll get another room."

"Thank you, Tom, but you can't. There isn't a room in Anzio; there are families of suspendees sleeping in the grass tonight."

"I can sleep in the grass if I have to."

She shook her head. "Thank you," she repeated.

I stood between her and the door. "Then we'll both stay here. I'll sleep on the couch. You can have the bed." I hesitated, then added, "You can trust me, Rena."

She looked at me gravely for a moment. Then she smiled. "I'm sure I can, Tom. I appreciate your offer. I accept."

I AM built too long for a hotel-room couch, particularly a room in a Mediterranean coastal fleabag. I lay staring into the white Italian night; the Moon brightened the clouds outside the window, and the room was clearly enough illuminated to show me the bed and the slight, motionless form in it. Rena was not a restless sleeper, I thought. Nor did she snore.

Rena was a most self-possessed girl, in fact. She had overruled me when I tried to keep the bellboy from clearing away the dinner service. "Do you think no other Company man ever had a girl in his room?" she innocently asked. She borrowed a pair of the new pajamas Defoe's thoughtful expediters had bought and put in the bureau. But I hadn't expected that, while the bellboy was clearing away, she would be

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softly singing to herself in the bath.

He had seemed not even to hear.

He had also leaped to conclusions — not that it was much of a leap, I suppose. But he had conspicuously not removed the bottle of champagne and its silver bucket of melting ice.

It felt good, being in the same room with Rena.

I shifted again, hunching up my torso to give my legs a chance to stretch out. I looked anxiously to see if the movement had disturbed her.

There is a story about an animal experimenter who left a chimpanzee in an empty room. He closed the door on the ape and bent to look through the keyhole, to see what the animal would do. But all he saw was an eye — because the chimp was just as curious about the experimenter.

In the half-light, I saw a sparkle of moonlight in Rena's eye; she was watching me. She half-giggled, a smothered sound.

"You ought to be asleep," I accused.

"And you, Tom."

I obediently closed my eyes, but I didn't stop seeing her.

If only she weren't a fanatic.

And if she had to be a fanatic, why did she have to be the one kind that was my natural enemy, a member of the group of irresponsible troublemakers that Defoe had ordered me to "handle"?

What, I wondered, did he mean by "handle"? Did it include chlorpromazine in a lytic solution and a plastic cocoon?

I put that thought out of my mind; there was no chance whatever that her crazy belief, that the Company was using suspension as a retaliatory measure, was correct. But thinking of Defoe made me think of my work. After all, I told myself, Rena was more than a person. She was a key that could unlock the whole riddle. She had the answers — if there was a movement of any size, she would know its structure.

I thought for a moment and withdrew the "if." She had admitted the riot of that afternoon was planned. It *had* to be a tightly organized group.

And she had to have the key.

AT LAST, I had been getting slightly drowsy, but suddenly I was wide awake.

There were two possibilities. I faced the first of them shakily — *she might be right.* Everything within me revolted against the notion, but I accepted it as a theoretical possibility. If so, I would, of course, have to revise some basic notions.

On the other hand, she might be wrong. I was certain she *was*

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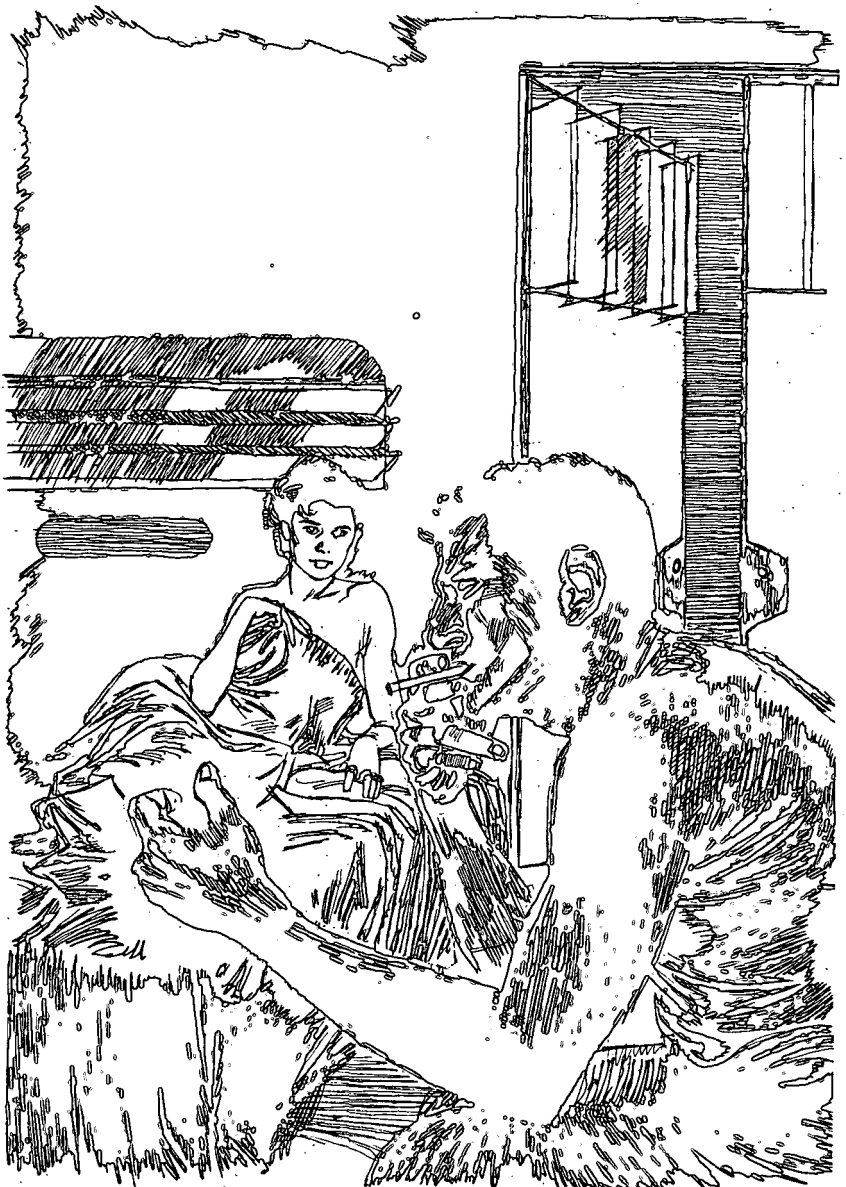

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wrong. But I was equally certain she was no raddled malcontent and if she was wrong, and I could prove it to her, she herself might make some revisions.

Propped on one elbow, I peered at her. "Rena?" I whispered questioningly.

She stirred. "Yes, Tom?"

"If you're not asleep, can we take a couple more minutes to talk?"

"Of course." I sat up and reached for the light switch, but she said, "Must we have the lights? The Moon is very bright."

"Sure." I sat on the edge of the couch and reached for a cigarette. "Can I offer you a deal, Rena?"

"What sort of deal?"

"A horsetrade. You think the Company is corrupt and your father is not a casualty, right?"

"Correct, Tom."

"And I think the Company is not corrupt and your father has radiation poisoning. One of us has to be wrong, right?"

"Correct, Tom."

"Let's find out. There are ways of testing for radiation-sickness. I'll go into the clinic in the morning and get the answer."

She also lifted up on one elbow, peering at me, her long hair braided down her back. "Will you?"

"Sure. And we'll make bets on it, Rena. If you are wrong — if your father has radiation poisoning — I want you to tell me everything there is to tell about the riot today and the people behind it. If I'm wrong —" I swallowed — "if I'm wrong, I'll get your father out of there for you. Somehow. I promise it, Rena."

There was absolute silence for a long time. Then she swung out of the bed and hurried over to me, her hands on mine. She looked at me and again I saw tears. "Will you do that, Tom?" she asked, hardly audible.

"Why, sure," I said awkwardly. "But you have to promise —"

"I promise!"

She was staring at me, at arm's length. And then something happened. She wasn't staring and she wasn't at arm's length.

Kissing her was like tasting candied violets; and the Moon made her lovelier than anything human; and the bellboy had not been so presumptuous, after all, when he left us the champagne.

VIII

DR. LAWTON was "away from his desk" the next morning. That was all to the good. I was not a hardened enough conspirator to seek out chances to make mistakes, and although I had a perfectly good excuse for wanting to go down into the vaults again, I wasn't anxious to have to use it.

The expediter-officer in charge,

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though, didn't even ask for reasons. He furnished me with what I wanted — a map of the vaults and a radiation-counter — and turned me loose.

Looking at the map, I was astonished at the size of this subterranean pyramid. Lawton had said we had eighty-odd thousand sleepers filed away and that had surprised me, but by the chart I held in my hand, there was space for perhaps ten times that many. It was beyond belief that so much space was really needed, I thought — unless there was some truth to Rena's belief that the Company used the clinics for prisons. . .

I applied myself to the map.

And, naturally, I read it wrong. It was very simple; I merely went to the wrong level, that was all.

It looked wrong as soon as I stepped out of the elevator. An elderly, officious civilian with a British accent barred my way. "You aren't one of us, are you?"

I said, "I doubt it."

"Then would you mind?" he asked politely, and indicated a spot on the side of the hall. Perhaps I was suggestible, but I obeyed his request without question. It was just as well, because a sort of procession rounded a bend and came down the corridor. There was a wheeled stretcher, with three elderly civilians puttering around it, and a bored medic following with a jar of something held aloft, feeding through a thin plastic tube into the arm of the man on the stretcher, as well as half a dozen others of more nondescript types.

The man who had stopped me nearly ran to meet the stretcher. He stared into the waxy face and whispered, "It's he! Oh, absolutely, it is he!"

I looked and the face was oddly familiar. It reminded me of my childhood; it had a link with school days and the excitement of turning twelve. By the way the four old men were carrying on, however, it meant more than that to them. It meant, if not the Second Coming, at least something close to it.

By then I had figured out that this was that rare event in the day of a clinic — a revival. I had never seen one. I suppose I could have got out of the way and gone about my conspiratorial business, and it is no credit to me as a conspirator that I did not. But I was fascinated.

Too fascinated to wonder why revivals were so rare. . .

THE medic looked at his watch and, with careless efficiency, plucked the tube out of the waxy man's arm.

"Two minutes," he said to one of the civilians. "Then he'll be as good as he ever was. You've got

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his clothes and release papers?"

"Oh, definitely," said the civilian, beaming.

"Okay. And you understand that the Company takes no responsibility beyond the policy covering? After all, he was one of the first men suspended. We think we can give him another year or so — which is a year more than he would have had, at that — but he's not what you'd call a Grade A risk."

"Certainly," agreed the civilian. "Can we talk to him now?"

"As soon as he opens his eyes."

The civilian bent over the man, who no longer looked waxy. His face was now a mottled gray and his eyelids were flickering. He had begun to breathe heavily and irregularly, and he was mumbling something I couldn't understand. The civilian whispered in his ear and the revived man opened his eyes and looked at him.

It was like seeing the dead come to life. It was exactly that, in fact; twenty minutes before, no chemical test, no stethoscope or probing thumb in the eye socket could have detected the faint living glow in the almost-dead cells. And yet — now he looked, he breathed, he spoke.

"I made it," were his first understandable words.

"Indeed you did!" crowed the civilian in charge, while all of the others murmured happily to each other. "Sir, it is my pleasure to welcome you back to us. You are in Anzio, Italy. And I am Thomas Welbourne, at your service."

The faint eyes sparkled. Dead, near-dead or merely decrepit, this was a man who wanted to enjoy life. Minutes out of the tomb, he said: "No! Not young Tommy Welbourne!"

"His grandson, sir," said the civilian.

I had it just then — that face had watched me through a whole year of school. It had been in a frame at the front of the room, with half a dozen other faces. It had a name under it, which, try as I might, I couldn't recall; but the face was there all the same. It was an easy one to keep in mind — strong though sunken, ancient but very much alive.

He was saying, in a voice as confident as any youth's, "Ah, Tommy, I've lived to see it! Tell me, have you been to Mars? What is on the other side of the Moon? And the Russians — what are the Russians up to these days?"

The civilian coughed and tried to interrupt, but the figure on the stretcher went on heedlessly: "All those years gone — what wonders must we have. A tunnel under the Atlantic, I'll wager! And ships that fly a hundred times the speed of sound. Tell me, Tommy Wel-

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bourne! Don't keep an old man waiting!"

THE civilian said reluctantly, but patiently, "Perhaps it will take a little explaining, sir. You see, there have been changes —"

"I know it, boy! That's what I'm asking you!"

"Well, not that sort of changes, sir. We've learned new virtues since your time — patience and stability, things of that sort. You see —"

The interesting part was over and the glances of the others in the party reminded me that I didn't belong here. I stole off, but not before the man on the stretcher noticed me and made a sort of clumsy two-fingered salute of hail and farewell as I left. It was exactly like the gesture in his picture on that schoolroom wall, up next to the presidents and the greatest of kings.

I found a staircase and climbed to another level of the boxlike clinic.

The local peasants called the vaults "coolers" or "ice cubes." I suppose the reason had something to do with the fact that they were cool and rectangular, on the whole — perhaps because, like icebergs, the great bulk of the vaults was below the surface. But whatever you called them, they were huge. And the clinic at Anzio was only one out of hundreds scattered all over the world.

It was all a matter of viewpoint. To me, the clinics were emblems of the Company's concern for the world. In any imaginable disaster — even if some fantastic plague struck the entire race at once — the affected population could be neatly and effectively preserved until medicine could catch up with their cures.

To Rena, they were prisons big enough to hold the human race.

It was time to find out which of us was right. I hurried through the corridors, between the tiers of sleepers, almost touching them on both sides. I saw the faint purplish gleam where Rena had spilled the fluid, and knelt beside the cocoon that held her father.

The UV sterilizers overhead made everything look ghastly violet, but in any light, the waxy face under the plastic would have looked dead as death itself. I couldn't blame Rena for weeping.

I took out the little radiation counter and looked at it awkwardly. There was nothing complicated about the device — fortunately, because I had had little experience with them. It was a cylinder with a flaring snout at one end, a calibrated gauge at the side, marked in micro-roentgens. The little needle flickered in the green area of the dial. I held it to myself and the

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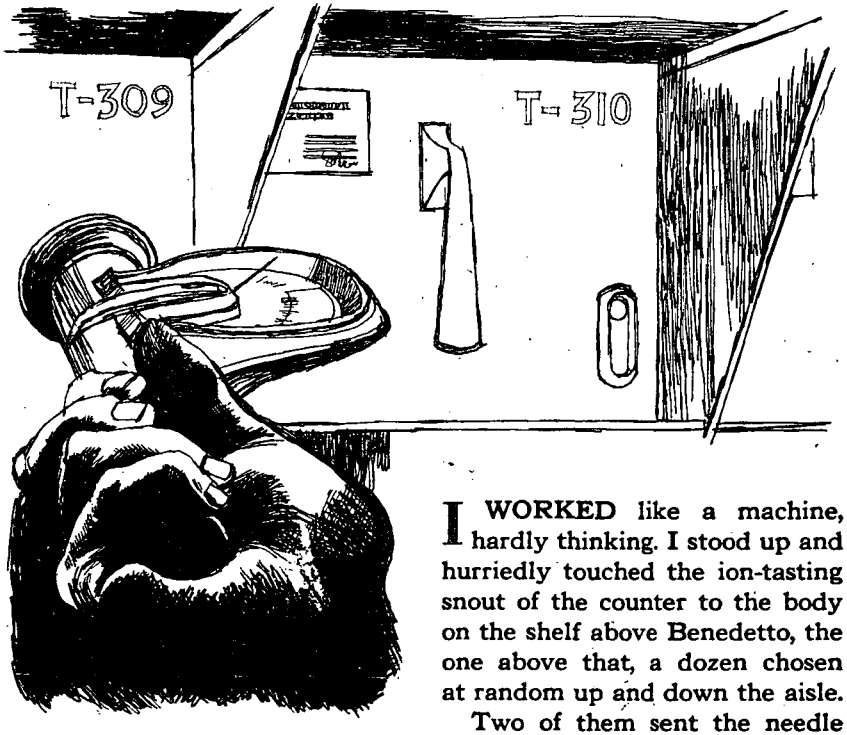

reading didn't change. I pointed it up and pointed it down; it didn't change.

I held it to the radiation-seared body of Benedetto dell'Angela.

And it didn't change.

Radiation-seared? Not unless the instrument lied! If dell'Angela had ever in his life been within the disaster radius of an atomic explosion, it had been so long before that every trace of radioactive byproduct was gone!

Rena was right!

I WORKED like a machine, hardly thinking. I stood up and hurriedly touched the ion-tasting snout of the counter to the body on the shelf above Benedetto, the one above that, a dozen chosen at random up and down the aisle.

Two of them sent the needle surging clear off the scale; three were as untainted by radioactivity as Benedetto himself. A few others gave readings from "mild" to "lethal" — but all in the danger area.

Most were as untainted by radiation as Benedetto himself.

It was possible, I told myself frantically, that there were mysteries here I did not understand. Perhaps after a few months or a year, the radiation level would drop, so that the victim was still in deadly danger while the

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emitted radiation of his body was too slight to affect the counter. I didn't see how, but it was worth a thought. Anything was worth a thought that promised another explanation to this than the one Rena had given!

There had been, I remembered, a score or more of new suspendees in the main receiving vault at the juncture of the corridors. I hurried back to it. Here were fresh cases, bound to show on the gauge.

I leaned over the nearest one, first checking to make sure its identification tag was the cross-hatched red one that marked "radiation." I brought the counter close to the shriveled face —

But I didn't read the dial, not at first. I didn't have to. For I recognized that face. I had seen it, contorted in terror, mumbling frantic pleas for mercy, weeping and howling, on the old Class E uninsurable the expediters had found hiding in the vaults.

He had no radiation poisoning . . . unless a bomb had exploded in these very vaults in the past twelve hours.

It wasn't pleasant to stand there and stare around the vaults that were designed for the single purpose of saving human life — and to wonder how many of the eighty thousand souls it held were also prisoners.

And it wasn't even tolerable to think the thought that followed. If the Company was corrupt, and I had worked to do the Company's business, how much of this guilt was mine?

The Company, I had said and thought and tried to force others to agree, was the hope of humanity — the force that had permanently ended war (almost), driven out disease (nearly), destroyed the threat to any human of hunger or homelessness (in spite of the starving old man who slept in the shadow of the crypt, and others like him).

BUT I had to face the facts that controverted the Big Lie. If war was ended, what about Naples and Sicily, and Prague and Vienna, and all the squabbles in the Far East? *If there was no danger from disease, why had Marianna died?*

Rena had said that if there was no danger of disaster, no one would have paid their premiums. Obviously the Company could not have wanted that, but why had I never seen it before? Sample wars, sample deaths — the Company needed them. And no one, least of all me, fretted about how the samples felt about it.

Well, that was behind me. I'd made a bet with Rena, and I'd lost, and I had to pay off.

I opened the cased hypodermic kit Rena had given me and exam-

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ined it uncomfortably. I had never used the old-fashioned sort of needle hypodermic; I knew a little something about the high-pressure spray type that forced its contents into the skin without leaving a mark, but I was very far from sure that I could manage this one without doing something wrong. Besides, there wasn't much of the fluid left, only the few drops left in the bottom of the bottle after Rena had loaded the needle that had been smashed.

I hurried back along the corridor toward Benedetto dell'Angela. I neared again the red-labeled door marked Bay 100, glanced at it in passing — and stopped.

This was the door that only a handful of people could open. It was labeled in five languages: "Entrance Strictly Prohibited. Experimental Section."

Why was it standing ajar?

And I heard a faint whisper of a moan: *"Aiutemi, aiutemi."*

Someone inside was calling for help!

If I had been a hardened conspirator, I would never have stopped to investigate. But, of course, I wasn't. I pushed the door aside, against resistance, and peered in.

And that was my third major shock in the past quarter of an hour, because, writhing feebly just inside the door, staring up at me with an expression of pain and anger, was Luigi Zorchi.

He propped himself up on his hands, the rags of his plastic cocoon dangling from his shoulders.

"Oho," he said faintly. "The apprentice assassin again."

I found water for him at a bubble-fountain by the ramp; he drank at least a quart before I made him stop. Then he lay back, panting, staring at me. Except for the shreds of plastic and the bandages around the stumps of his legs, he was nude, like all the other suspendees inside their sacks. The luxuriant hair had already begun to grow back.

HE LICKED his lips. More vigorous now, he snarled: "The plan fails, does it not? You think you have Zorchi out of the way, but he will not stay there."

I said, "Zorchi, I'm sorry about all this I — I know more now than I did yesterday."

He gaped. "Yesterday? Only *yesterday?"* He shook his head. "I would have thought a month, at the least. I have been crawling, assassin. Crawling for days, I thought." He tried to shrug — not easy, because he was leaning on his elbows. "Very well, Weels. You may take me back to finish the job now. Sticking me with a needle and putting me on ice will not work. Perhaps you should kill me outright."

"Listen, Zorchi, I *said* I was

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sorry. Let's let it go at that for a moment. I — I admit you shouldn't be here. The question is, how do you come to be awake?"

"How not? I am Zorchi, Weels. Cut me and I heal; poison me and I cure myself." He spat furiously. "Starve me, however, and I no doubt will die, and it is true that you have come very near to starving me down here." He glowered at the shelves of cocooned bodies in the locked bay. "A pity, with all this pork and beef on the rack, waiting for me, but I find I am not a monster, Weels. It is a weakness; I do not suppose it would stop any Company man for a moment."

"Look, Zorchi," I begged, "take my word for it — I want to help you. You might as well believe me, you know. You can't be any worse off than you are."

He stared at me sullenly for a moment. Then, "True enough," he admitted. "What then, Weels?"

I said hesitantly, "Well, I'd like to get you out of here. . ."

"Oh, yes. I would like that, too. How shall we do it?"

I rubbed the back of my neck thoughtfully, staring at him. I had had a sort of half-baked, partly worked out plan for rescuing Benedetto. Wake him up with the needle; find a medical orderly's whites somewhere; dress him; and walk him out.

It wasn't the best of all possible plans, but I had rank enough, particularly with Defoe off in Rome, to take a few liberties or stop questions if it became necessary. And besides, I hadn't really thought I'd have to do it. I had fully expected — as recently as half an hour ago! — that I would find Benedetto raddled with gamma rays, a certainty for death if revived before the half-life period of the radioelements in his body had brought the level down to safety.

THAT plan might work for Benedetto. But Zorchi, to mention only one possible obstacle, couldn't walk. And Benedetto, once I took off his beard with the razor Rena had insisted I bring for that purpose, would not be likely to be recognized by anyone.

Zorchi, on the other hand, was very nearly unforgettable.

I said honestly, "I don't know."

He nodded. "Nor do I, Weels. Take me then to your Defoe." His face wrinkled in an expression of fury and fear. "Die I can, if I must, but I do not wish to starve. It is good to be able to grow a leg, but do you understand that the leg must come from somewhere? I cannot make it out of air, Weels — I must eat. When I am in my home at Naples, I eat five, six, eight times

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a day; it is the way my body must have it. So if Defoe wishes to kill me, we will let him, but I must leave here *now*."

I shook my head. "Please understand me, Zorchi — I can't even do that for you. I can't have anybody asking me what I was doing down in this level." I hesitated only briefly; then, realizing that I was already in so deeply that secrecy no longer mattered, I told him about Benedetto dell'Angela, and the riot that failed, and my promise.

His reaction was incredulity. "You did not know, Weels? The arms and legs of the Company do not know what thoughts pass through its brain? Truly, the Company is a wonderful thing! Even the peasants know this much — the Company will do anything it must."

"I admit I never guessed. Now what?"

"That is up to you, Weels. If you try to take the two of us out, it endangers you. It is for you to decide."

So, of course, I could decide only one way.

I hid the hypodermic behind one of the bodies in Bay 100; it was no longer useful to me. I persuaded Zorchi to lie quietly in one of the tiers near Benedetto, slammed the heavy door to Bay 100, and heard the locks snap. That was the crossing of the Rubicon. You could open that door easily enough from inside — that was to protect any personnel who might be caught in there. But only Defoe and a couple of others could open it from without, and the hypodermic was now as far out of reach as the Moon.

I opened Benedetto dell'Angela's face mask and shaved him, then sealed it again. I found another suspendee of about the same build, made sure the man was not radioactive, and transferred them. I switched tags: Benedetto dell'Angela was now Elio Barletteria. Then I walked unsteadily to the ramp, picked up the intercom and ordered the medical officer in charge to come down.

IT WAS not Dr. Lawton who came, fortunately, but one of his helpers who had seen me before. I pointed to the pseudo-Barletteria. "I want this man revived."

He sputtered, "You — you can't just take a suspendee out of his trance, Mr. Wills. It's a violation of medical ethics! These men are *sick*. They —"

"They'll be sicker still if we don't get some information from this one," I said grimly. "Are you going to obey Mr. Defoe's orders or not?"

He sputtered some more, but

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he gave in. His orderlies took Benedetto to the receiving station at the foot of the vault; one of them stood by while the doctor worriedly went through his routine. I sat and smoked, watching the procedure.

It was simple enough. One injection, a little chafing of the hands and feet by the bored orderly while the doctor glowered and I stonily refused to answer his questions, and a lot of waiting. And then the "casualty" stirred and moaned.

All the stand-by apparatus was there — the oxygen tent and the pulmotor and the heart stimulator and so on. But none of it was needed.

I said: "Fine, Doctor. Now send the orderly to have an ambulance standing by at the main entrance, and make out an exit pass for this casualty."

"No!" the doctor shouted. "This is against every rule, Mr. Wills. I insist on calling Dr. Lawton —"

"By all means," I said. "But there isn't much time. Make out the pass and get the ambulance, and we'll clear it with Dr. Lawton on the way out." He was all ready to say no again when I added: "This is by direct order of Mr. Defoe. Are you questioning his orders?"

He wasn't — not as long as I was going to clear it with Dr. Lawton. He did as I asked. One of the advantages of the Company's rigid regulations was that it was hard to enforce strict security on its personnel. If you didn't tell the staff that they were working for something needing covering up, you couldn't expect them to be constantly on guard.

When the orderly was gone and the doctor had scrawled out the pass, I said cordially, "Thank you, Doctor. Now would you like to know what all the fuss was about?"

"I certainly would," he snapped. "If you think —"

"I'm sorry," I apologized. "Come over here and take a look at this man."

I JUGGLED the radiation counter in my hand as he stalked over. "Take a look at his eyes," I invited.

"Are you trying to tell me that this is a dangerously radioactive case? I warn you, Mr. Wills —"

"No, no," I said. "See for yourself. Look at the right eye, just beside the nose."

He bent over the awakening body, searchingly.

I clonked him with the radiation counter on the back of the head. They must have retired that particular counter from service after that; it wasn't likely to be very accurate any more.

The orderly found me bending over the doctor's body and call-

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ing for help. He bent, too, and he got the same treatment. Benedetto by then was awake; he listened to me and didn't ask questions. The blessings of dealing with conspirators — it was not necessary to explain things more than once.

And so, with a correctly uniformed orderly, who happened to be Benedetto dell'Angela, pushing the stretcher, and with myself displaying a properly made out pass to the expediter at the door, we rolled the sham-unconscious body of Luigi Zorchi out to a waiting ambulance.

I felt my pulse hammering as we passed the expediter at the door. I had thrown my coat over the place where legs should have been on "Barletteria," and Benedetto's old plastic cocoon, into which we had squeezed Zorchi, concealed most of him.

I NEEDN'T have worried. The expediter not only wasn't suspicious, he wasn't even interested.

Benedetto and I lifted Zorchi into the ambulance. Benedetto climbed in after him and closed the doors, and I went to the front. "You're dismissed," I told the driver. "I'll drive."

As soon as we were out of sight of the clinic, I found a phone, got Rena at the hotel, told her to meet me under the marquee. In five minutes, she was beside me and we were heading for the roads to the north.

"You win," I told her. "Your father's in back — along with somebody else. Now what? Do we just try to get lost in the hills somewhere?"

"No, Tom," she said breathlessly. "I — I have made arrangements." She giggled. "I walked around the square and around, until someone came up to me. You do not know how many gentlemen came before that! But then one of my — friends showed up, to see if I was all right, and I arranged it. We go up the Rome highway two miles and there will be a truck."

"Fine," I said, stepping on the gas. "Now do you want to climb back and tell your father —"

I stopped in the middle of the word. Rena peered at me. "Tom," she asked anxiously, "is something wrong?"

I swallowed, staring after a disappearing limousine in the rear-view mirror. "I — hope not," I said. "But your friends had better be there, because we don't have much time. I saw Defoe in the back of that limousine."

—EDSON McCANN

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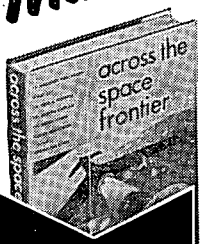

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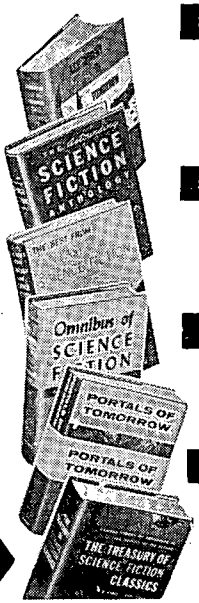

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